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United States
Department of
Agriculture

Natural
Resources
Conservation
Service

Washington Basin Outlook Report June 1, 2001

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Basin Outlook Reports and Federal - State - Private Cooperative Snow Surveys

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How forecasts are made

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

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Washington Water Supply Outlook

June 2001

General Outlook

With relatively normal springtime weather including rain, sunshine, cold snaps and heat waves, overall conditions didn't change much in May. Federal agencies responsible for weather forecasts indicate the most probability for near normal temperature and precipitation conditions for the next 30 – 90 days. Current deficits in soil moisture and plant vigor have some officials concerned about potential fire danger, especially in Eastern Washington. This report will be the last published outlook for this water-year but will commence again in January 2002.

Snowpack

The June 1 statewide SNOTEL readings decreased dramatically from last month. Late season snow accumulations, that didn't have a chance to mature, melted off very rapidly. Only 13 of 55 SNOTEL sites still report having snowpack with the rest having melted out an average of 24 days early. Average water content at the 13 remaining sites is only 54% of average and most of them will melt out approximately one month earlier than normal.

BASIN	PERCENT OF LAST YEAR	PERCENT OF AVERAGE
Spokane	21	13
Newman Lake	0	0
Pend Oreille	34	20
Okanogan	40	49
Methow	10	9
Similkameen	0	0
Wenatchee	35	36
Chelan	34	39
Upper Yakima	28	36
Lower Yakima	25	36
Ahtanum Creek	0	0
Walla Walla	0	0
Lower Snake	0	0
Cowlitz	38	53
Lewis	6	26
White	31	49
Green	23	18
Puyallup	31	49
Cedar	0	0
Snoqualmie	41	63
Skykomish	48	84
Skagit	33	28
Baker	0	38
Nooksack	0	0
Olympic Peninsula	0	0

Precipitation

During the month of May, the National Weather Service and Natural Resources Conservation Service climate stations reported varying precipitation totals throughout Washington river basins. The highest percent of average in the state was at Glenwood 2 WA. Glenwood reported 205% of average for a total of 1.52 inches. The average for this site is 0.74 inches for May. Basin averages for the water year remained steadfast at only 74% of average in Walla Walla river basins to 54% of average in Okanogan-Methow river basins. The highest individual site average for the water year was 83% of average at Mill Creek Dam near Walla Walla.

RIVER BASIN	MAY PERCENT OF AVERAGE	WATER YEAR PERCENT OF AVERAGE
Spokane	64	62
Colville-Pend Oreille	60	57
Okanogan-Methow	36	54
Wenatchee-Chelan	94	59
Upper Yakima	99	60
Lower Yakima	68	57
Walla Walla	68	74
Lower Snake	50	69
Cowlitz-Lewis	85	57
White-Green-Puyallup	88	64
Central Puget Sound	96	64
North Puget Sound	103	59
Olympic Peninsula	91	65

Reservoir

Seasonal reservoir levels in Washington vary greatly due to specific watershed management practices required in preparation for irrigation season, fisheries management and power generation. Reservoir storage in the Yakima Basin was 497,300-acre feet, 67% of average for the Upper Reaches and 182,900-acre feet, 94% of average for Rimrock and Bumping Lakes. Storage at the Okanogan reservoirs was 67% of average for June 1. The power generation reservoirs included the following: Coeur d'Alene Lake, 228,500 acre feet, 81% of average and 96% of capacity; Chelan Lake, 556,200 acre feet, 123% of average and 82% of capacity; and Ross Lake at 99% of average and 73% of capacity. Above average current storage at some reservoirs is associated with management efforts to buffer potential summer shortages. Below average storage can be attributed to below average seasonal snowmelt and precipitation to date.

BASIN	PERCENT OF CAPACITY	CURRENT STORAGE AS PERCENT OF AVERAGE
Spokane	96	81
Colville-Pend Oreille	76	139
Okanogan-Methow	51	67
Wenatchee-Chelan	82	123
Upper Yakima	60	67
Lower Yakima	79	94
North Puget Sound	74	99

For more information contact your local Natural Resources Conservation Service office.

Streamflow

June forecasts indicate a moderate decrease in most streams, reflecting the lack of sustained snowpack in the state. Forecasts vary from 92% of average for Mill Creek at Walla Walla to 33% of average for Bumping Lake and Kachees Lake inflows. June forecasts for some Western Washington streams include: Cedar River near Cedar Falls, 65%; Green River, 55%; and Skagit River, 56%. Some Eastern Washington streams include the Yakima River near Parker, 47%; Wenatchee River at Plain, 42%; and Spokane River near Post Falls, 45%. Volumetric forecasts are developed using current, historic and average snowpack, precipitation and streamflow data collected and coordinated by organizations cooperating with NRCS.

Most streamflows reported for May were below to near average across the state. The Cowlitz at Castle Rock had the highest flows with 99% of average. The Methow River near Pateros with 39% of average, was the lowest in the state. Other streamflows were the following percentage of average: the Priest River, 69%; the Spokane at Spokane, 62%; the Columbia below Rock Island Dam, 71%; the Le Elum near Roslyn, 86%; and the Snake River below Ice Harbor Dam, 61%.

BASIN	PERCENT OF AVERAGE MOST PROBABLE FORECAST (50 PERCENT CHANCE OF EXCEEDENCE)
-------	---

Spokane	45-52
Colville-Pend Oreille	34-60
Okanogan-Methow	48-52
Wenatchee-Chelan	42-57
Upper Yakima	33-54
Lower Yakima	33-54
Walla Walla	83-92
Lower Snake	56
Cowlitz-Lewis	54-58
White-Green-Puyallup	55-56
Central Puget Sound	62-65
North Puget Sound	56-67
Olympic Peninsula	60

STREAM	PERCENT OF AVERAGE MAY STREAMFLOWS
--------	---------------------------------------

Pend Oreille Below Box Canyon	74
Kettle at Laurier	65
Columbia at Birchbank	54
Spokane at Long Lake	67
Similkameen at Nighthawk	60
Okanogan at Tonasket	54
Methow at Pateros	39
Chelan at Chelan	75
Wenatchee at Pashastin	78
Yakima at Cle Elum	85
Yakima at Parker	66
Naches at Naches	60
Grande Ronde at Troy	78
Snake below Lower Granite Dam	62
SF Walla Walla near Milton Freewater	87
Columbia River at The Dalles	68
Lewis at Ariel	92
Cowlitz below Mayfield Dam	94
Skagit at Concrete	92

For more information contact your local Natural Resources Conservation Service office.

BASIN SUMMARY OF SNOW COURSE DATA

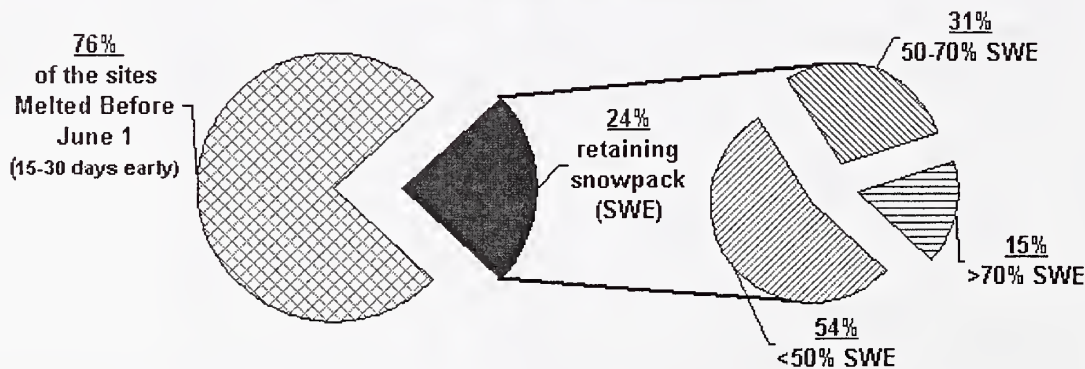
JUNE 2001

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-90	SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-90
ALPINE MEADOWS PILL	3500	6/01/01	---	23.8	42.7	22.7	MORRISSEY RIDGE CAN.	6100	6/01/01	---	6.6	--	10.7
BADGER PASS PILL	6900	6/01/01	---	8.9	12.6	20.9	MORSE LAKE PILL	5400	6/01/01	---	7.4	36.2	21.4
BARKER LAKES PILL	8250	6/01/01	---	.0	1.7	10.0	MOSES MTN PILL	4800	6/01/01	---	.0	.0	.0
BASIN CREEK PILL	7180	6/01/01	---	.0	.1	4.7	MOSQUITO RDG PILL	5200	6/01/01	---	.0	11.8	16.0
BEAVER CREEK TRAIL	2200	5/30/01	0	.0	.0	--	MOUNT CRAG PILL	4050	6/01/01	---	.0	1.6	.0
BEAVER PASS	3680	5/30/01	0	.0	9.3	--	MT. KOBAY CAN.	5500	5/31/01	0	.0	1.2	5.0
BIG WHITE MTN CAN.	5510	5/31/01	5	1.7	13.0	7.6	MOUNT GARDNER PILL	2860	6/01/01	---	.0	.0	.0
BLACK PINE PILL	7100	6/01/01	---	.0	.3	2.4	N.F. ELK CR PILL	6250	6/01/01	---	.0	.5	.9
BLEWETT PASS#2PILL	4270	6/01/01	0	.0	.0	.0	NEW HOZOMEEN LAKE	2800	5/30/01	0	.0	.0	--
BRENDA MINE CAN.	4450	6/01/01	---	.0	.0	--	NEZ PERCE CMP PILL	5650	6/01/01	---	.0	.0	.2
BROWN TOP AM	6000	5/30/01	42	21.6	49.0	--	NOISY BASIN PILL	6040	6/01/01	---	11.5	25.8	30.2
BUMPING RIDGE PILL	4600	6/01/01	---	.0	12.4	6.3	NORTH FORK JOCKO	6330	5/29/01	22	10.9	17.7	26.3
BUNCHGRASS MDWPILL	5000	6/01/01	---	.0	12.9	15.4	OLALLIE MDWS PILL	3960	6/01/01	---	13.0	36.1	30.0
CHICKEN CREEK	4060	5/30/01	0	.0	.0	.0	PARADISE PARK PILL	5500	6/01/01	---	41.5	78.1	48.1
COMBINATION PILL	5600	6/01/01	---	.0	.0	.0	PARK CK RIDGE PILL	4600	6/01/01	0	.0	11.7	5.2
COPPER BOTTOM PILL	5200	6/01/01	---	.0	.0	.0	PETERSON MDW PILL	7200	6/01/01	---	.0	.2	2.7
CORRAL PASS PILL	6000	6/01/01	---	12.5	28.8	19.6	PIGTAIL PEAK PILL	5900	6/01/01	---	12.9	30.6	37.5
COUGAR MTN. PILL	3200	6/01/01	---	.0	.0	.0	PIKE CREEK PILL	5930	6/01/01	---	.0	.8	7.9
DALY CREEK PILL	5780	6/01/01	---	.0	.0	.0	POPE RIDGE PILL	3540	6/01/01	0	.0	.0	.0
DEVILS PARK	5900	5/30/01	35	17.2	33.4	31.8	POTATO HILL PILL	4500	6/01/01	---	.0	6.8	1.1
DISCOVERY BASIN	7050	5/31/01	0	.0	.0	4.2	QUARTZ PEAK PILL	4700	6/01/01	---	.0	.0	.0
ELBOW LAKE PILL	3200	6/01/01	---	.0	12.1	6.1	RAINY PASS PILL	4780	6/01/01	---	1.2	18.0	20.4
EMERY CREEK PILL	4350	6/01/01	---	.0	.0	.0	REX RIVER PILL	1900	6/01/01	0	.0	1.6	.0
ENDERBY CAN.	5800	5/31/01	62	28.0	50.4	38.9	ROCKER PEAK PILL	8000	6/01/01	---	2.1	3.7	13.2
FISH LAKE PILL	3370	6/01/01	0	.0	3.3	5.0	SADDLE MTN PILL	7900	6/01/01	---	.0	2.8	17.5
FLATTOP MTN PILL	6300	6/01/01	---	14.3	30.9	34.4	SALMON MDWS PILL	4500	6/01/01	---	.0	.0	.0
FREEZEOUT CK. TRAIL	3500	5/30/01	0	.0	.0	--	SASSE RIDGE PILL	4200	6/01/01	---	.0	2.8	1.3
FROHNER MDWS PILL	6480	6/01/01	---	.0	.0	1.2	SAVAGE PASS PILL	6170	6/01/01	---	.0	.0	12.5
GRASS MOUNTAIN #2	2900	5/26/01	0	.0	--	--	SAWMILL RIDGE	4700	5/26/01	0	.0	--	16.6
GRAVE CRK PILL	4300	6/01/01	---	.0	.0	.0	SHEEP CANYON PILL	4050	6/01/01	---	.0	26.5	11.6
GREEN LAKE PILL	6000	6/01/01	---	.0	.3	3.8	SILVER STAR MTN CAN.	5600	5/28/01	34	13.8	28.1	16.1
GROUSE CAMP PILL	5380	6/01/01	---	.0	.0	.0	SKALKAHO PILL	7260	6/01/01	---	.0	4.2	15.8
HAND CREEK PILL	5030	6/01/01	---	.0	.0	.0	SKOOKUM CREEK PILL	3920	6/01/01	---	.0	.0	.0
HARTS PASS PILL	6500	6/01/01	---	3.0	22.5	25.3	SPENCER MDW PILL	3400	6/01/01	---	.0	4.2	.0
HELL ROARING DIVIDE	5770	5/31/01	1	.4	11.4	11.2	SPIRIT LAKE PILL	3100	6/01/01	---	.0	.0	.0
HERRIG JUNCTION	4850	5/30/01	0	.0	.0	2.4	STAHL PEAK PILL	6030	6/01/01	---	7.6	23.7	27.3
HIGH RIDGE PILL	4980	6/01/01	---	.0	1.4	.6	STAMPEDE PASS PILL	3860	6/01/01	---	5.6	24.7	15.0
HOODOO BASIN PILL	6050	6/01/01	---	8.9	20.4	29.2	STEVENS PASS PILL	4070	6/01/01	---	.0	7.4	5.7
HUMBOLDT GLCH PILL	4250	6/01/01	---	.0	.0	.0	STRYKER BASIN	6180	5/30/01	11	4.5	15.2	20.6
JUNE LAKE PILL	3200	6/01/01	---	.0	29.1	.0	SUNSET PILL	5540	6/01/01	---	.0	.0	12.5
KRAFT CREEK PILL	4750	6/01/01	---	.0	.0	.0	SURPRISE LKS PILL	4250	6/01/01	---	1.9	37.4	14.5
LESTER CREEK	3100	5/26/01	0	.0	--	--	TINKHAM CREEK PILL	3000	6/01/01	---	.0	.1	.0
LOLO PASS PILL	5240	6/01/01	---	.0	.0	.0	TOUCHET #2 PILL	5530	6/01/01	---	.0	1.3	.0
LONE PINE PILL	3800	6/01/01	---	4.4	30.2	9.4	TROUGH #2 PILL	5310	6/01/01	---	.0	.0	6.0
LOOKOUT PILL	5140	6/01/01	---	.0	6.6	10.0	TV MOUNTAIN	6800	5/29/01	0	.0	.4	--
LOST HORSE PILL	5000	6/01/01	0	.0	.0	.0	TWELVEMILE PILL	5600	6/01/01	---	.0	.0	.6
LOST LAKE PILL	6110	6/01/01	---	11.2	33.8	46.8	TWIN CAMP	4100	5/26/01	0	.0	--	--
LUBRECHT PILL	4680	6/01/01	---	.0	.1	.0	TWIN LAKES PILL	6400	6/01/01	---	.0	6.3	25.8
LYMAN LAKE PILL	5900	6/01/01	---	21.5	51.2	43.3	UPPER WHEELER PILL	4400	6/01/01	---	.0	.0	.0
LYNN LAKE	4000	5/26/01	3	1.5	--	--	WARM SPRINGS PILL	7800	6/01/01	---	5.2	10.1	19.6
MEADOWS CABIN	1900	5/31/01	0	.0	.0	--	WELLS CREEK PILL	4200	6/01/01	---	.0	9.1	22.2
MEADOWS PASS PILL	3240	6/01/01	---	.0	.0	.0	WHITE PASS ES PILL	4500	6/01/01	---	.0	2.5	4.6
MICA CREEK PILL	4750	6/01/01	---	.0	.0	--	WHITE ROCKS MTN CAN.	7200	6/01/01	---	.0	9.3	6.6
MOOSE CREEK PILL	6200	6/01/01	---	.0	.0	.0							

June 1, 2001 - SNOTEL

Snow Melt Summary

based on 30-year average, snow-water-equivalent (SWE)





Natural Resources Conservation Service

Washington State

Snow, Water and Climate Services

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Helpful Internet Addresses

NRCS Snow Survey and Climate Services Homepages

Washington:

<http://www.wa.nrcs.usda.gov/snow/snow.htm>

Oregon:

<http://crystal.or.nrcs.usda.gov/snowsveys>

Idaho:

<http://idsnow.id.nrcs.usda.gov>

National Water and Climate Center (NWCC):

<http://www.wcc.nrcs.usda.gov>

NWCC Anonymous FTP Server:

<ftp.wcc.nrcs.usda.gov>

USDA-NRCS Agency Homepages

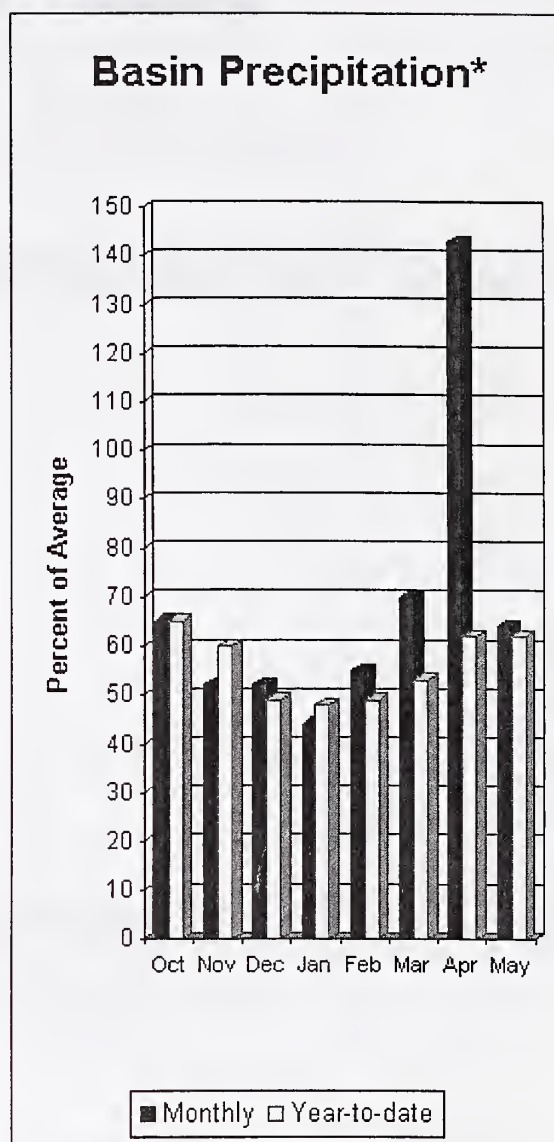
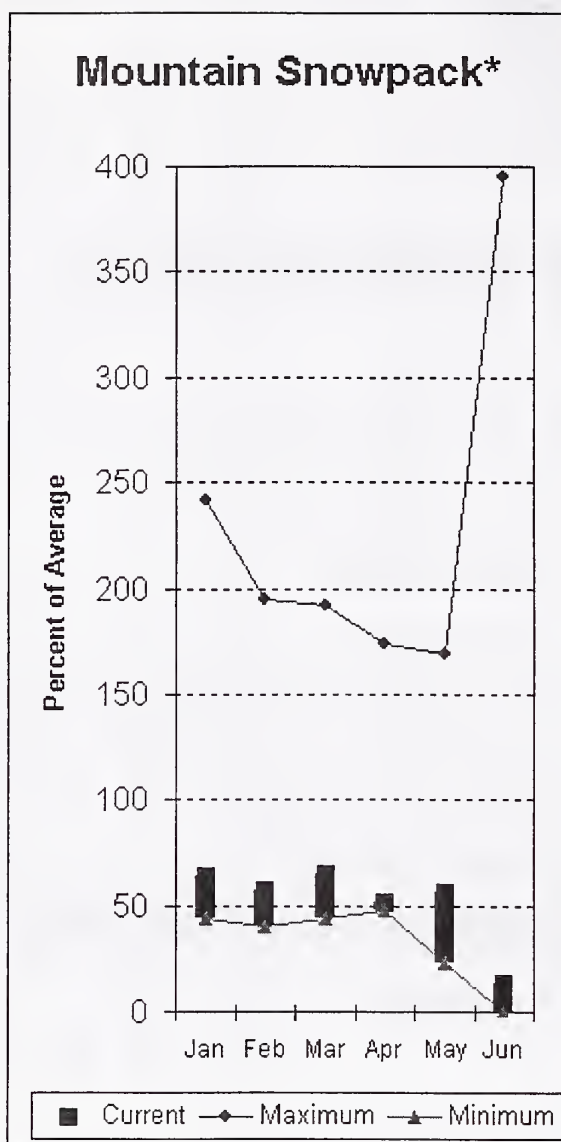
Washington:

<http://www.wa.nrcs.usda.gov/nrcs>

NRCS National:

<http://www.ftw.nrcs.usda.gov>

Spokane River Basin



*Based on selected stations

The June 1 forecasts for summer runoff within the Spokane River Basin are 45% of average near Post Falls and 52% at Long Lake. The forecast is based on a basin snowpack that is 13% of average and precipitation that is 62% of average for the water year. Precipitation for May was below normal at 64% of average. Streamflow on the Spokane River at Long Lake, was 67% of average for May. June 1 storage in Coeur d'Alene Lake, was 228,500-acre feet, 81% of average and 96% of capacity. Snowpack at Quartz Peak SNOTEL site melted out May 10th, almost a month early. Average temperatures in the Spokane basin were 2 degree above normal for May and 2 degrees below for the water year.

For more information contact your local Natural Resources Conservation Service office.

Spokane River Basin

SPOKANE RIVER BASIN Streamflow Forecasts - June 1, 2001

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>					
		Chance Of Exceeding *		Chance Of Exceeding *		Chance Of Exceeding *	
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SPOKANE near Post Falls (2)	JUN-SEP	134	263	350	45	437	785
	JUN-JUL	111	232	315	46	398	692
SPOKANE at Long Lake (2)	JUN-JUL	227	360	450	52	540	859
	JUN-SEP	320	463	560	52	657	1082

SPOKANE RIVER BASIN Reservoir Storage (1000 AF) - End of May					SPOKANE RIVER BASIN Watershed Snowpack Analysis - June 1, 2001			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
COEUR D'ALENE	238.5	228.5	215.5	280.5	SPOKANE RIVER	7	21	13
					NEWMAN LAKE	1	0	0

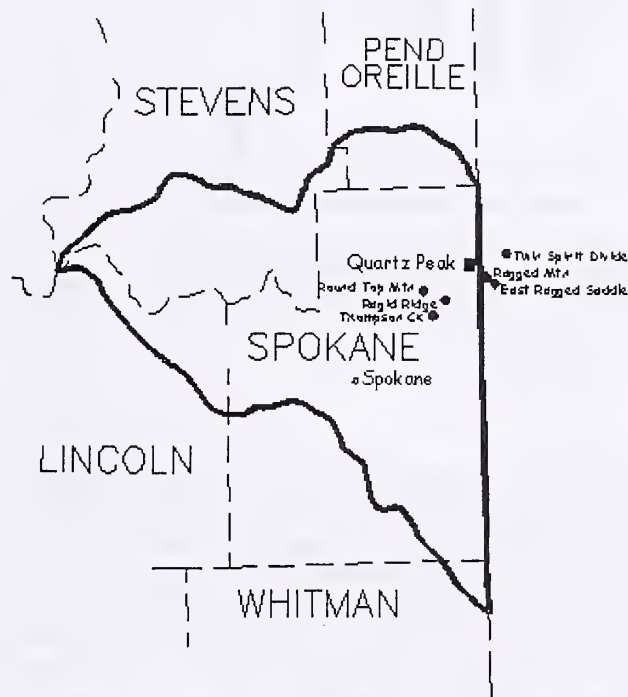
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

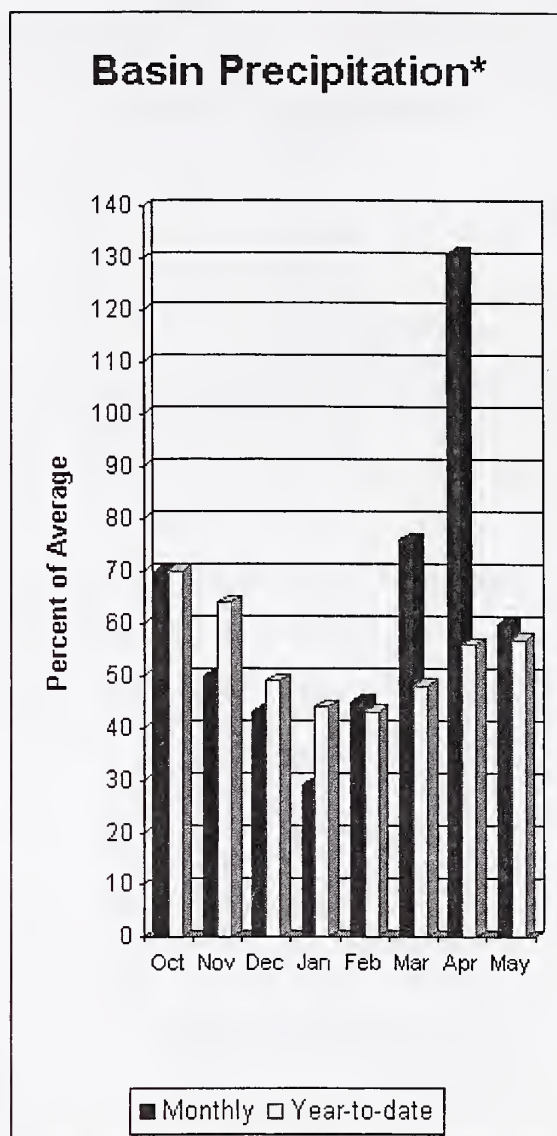
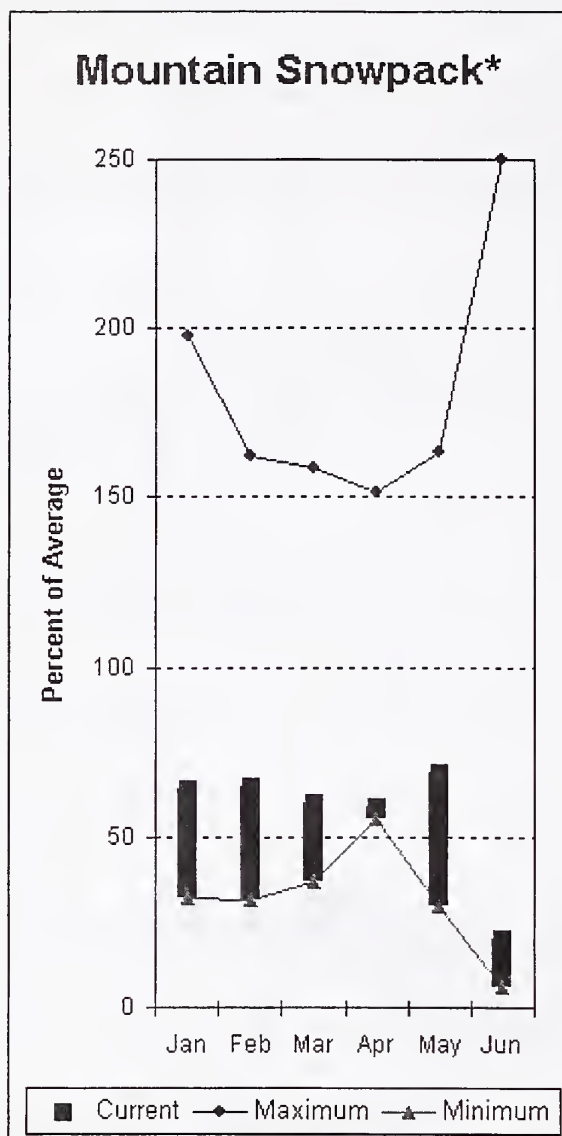
- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 (2) - The value is natural flow - actual flow may be affected by upstream water management.

Spokane River Basin
Percent of Average
June 1, 2001

Snowpack - 13%
Precipitation - 62%
Reservoir Capacity - 96%



Colville - Pend Oreille River Basins



*Based on selected stations

The June – September average forecast for the Kettle River streamflow is 60%, Colville at Kettle Falls is 43%, and Priest River near the town of Priest River is 34%. May streamflow was 72% of average on the Pend Oreille River, 54% on the Columbia at the International Boundary and 65% on the Kettle River. June 1 snow cover was 20% of average in the Pend Oreille Basin and 22% in the Kettle River Basin. Bunchgrass Meadows SNOTEL site melted out on May 25th, over a month early. Normally Bunchgrass would have 15.4 inches on June 1. Precipitation during May was 60% of average, bringing the year-to-date precipitation to 57% of average. Reservoir storage in Roosevelt and Banks lakes was reported to be 139% of average and 76% of capacity on June 1. Average temperatures were 2 degrees above normal for May and 2 degrees below for the water year.

For more information contact your local Natural Resources Conservation Service office.

Colville - Pend Oreille River Basins

Streamflow Forecasts - June 1, 2001

Forecast Point	Forecast Period	<===== Drier ===== Future Conditions ===== Wetter =====>				30-Yr Avg. (1000AF)		
		=====		Chance Of Exceeding *			=====	
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)		30% (1000AF)	10% (1000AF)
PEND OREILLE Lake Inflow (2)	JUN-JUL	1218	1966	2474	38	2982	3730	6449
	JUN-SEP	1870	2700	3264	43	3828	4658	7669
PRIEST near Priest (1,2)	JUN-JUL	10.0	64	88	30	112	166	297
	JUN-SEP	30	92	120	34	148	210	351
PEND OREILLE bl Box Canyon (2)	JUN-JUL	607	1726	2487	38	3248	4367	6543
	JUN-SEP	1196	2434	3276	42	4118	5356	7754
CHAMOKANE CREEK near Long Lake	JUL-AUG	1.04	1.25	1.40	45	1.55	1.76	3.12
COLVILLE at Kettle Falls	JUN-SEP	0.4	10.6	17.6	43	25	35	41
	JUN-JUL	0.3	6.0	11.9	40	17.8	27	30
KETTLE near Laurier	JUN-SEP	307	427	508	60	589	709	851
	JUN-JUL	295	390	455	60	520	615	758

COLVILLE - PEND OREILLE RIVER BASINS Reservoir Storage (1000 AF) - End of May					COLVILLE - PEND OREILLE RIVER BASINS Watershed Snowpack Analysis - June 1, 2001		
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of Last Yr Average
		This Year	Last Year	Avg			
ROOSEVELT	5232.0	3843.0	2120.5	2851.0	COLVILLE RIVER	0	0
BANKS	715.0	689.6	671.3	418.0	PEND OREILLE RIVER	42	34
					KETTLE RIVER	1	13

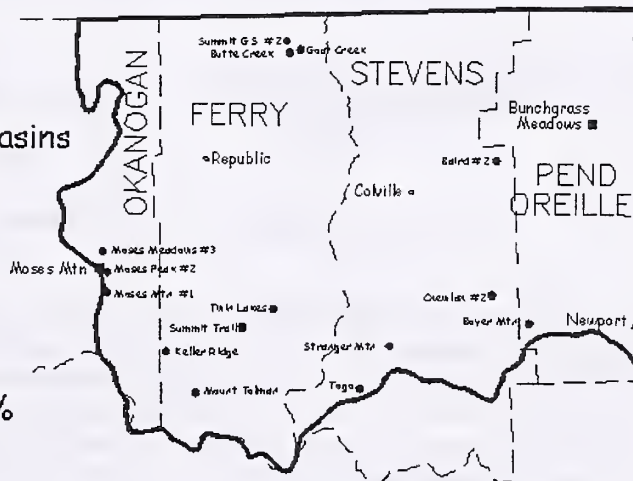
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The average is computed for the 1961-1990 base period.

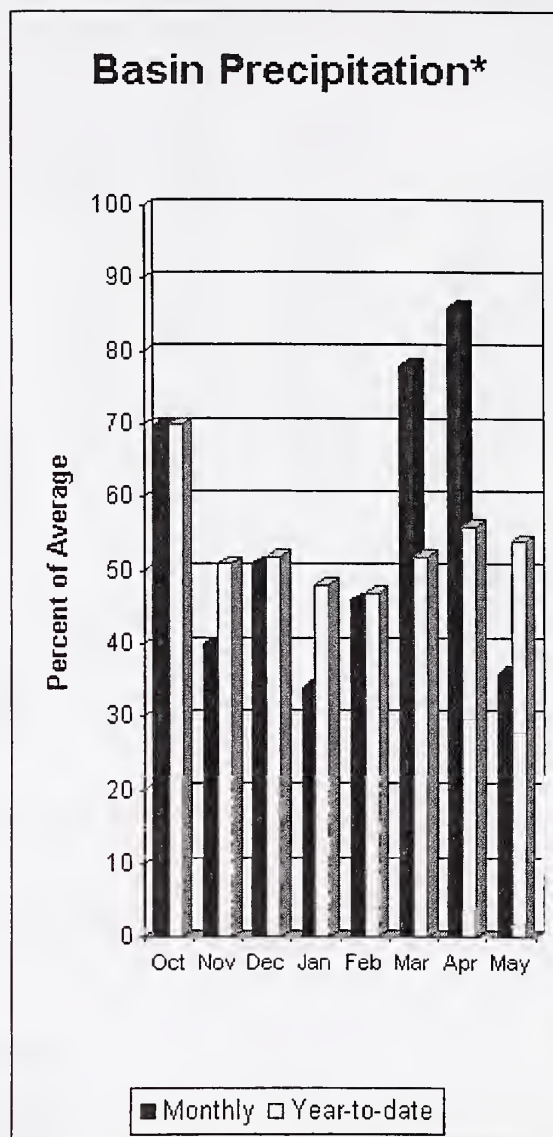
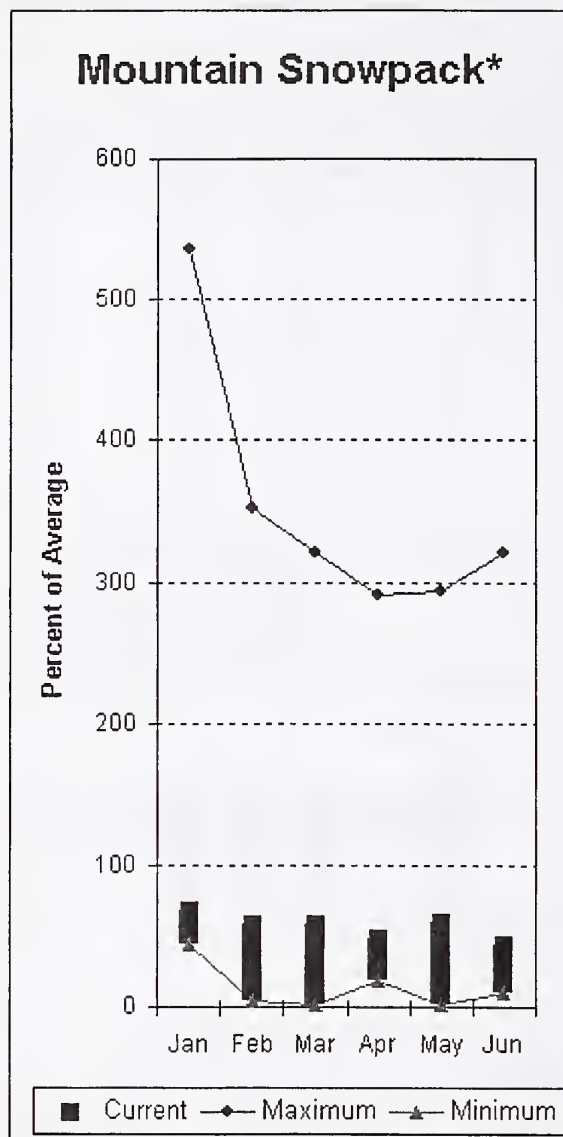
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 (2) - The value is natural flow - actual flow may be affected by upstream water management.

Colville-Pend Oreille River Basins Percent of Average June 1, 2001

Snowpack - 49%
 Precipitation - 57%
 Reservoir Capacity - 76%



Okanogan - Methow River Basins



*Based on selected stations

Summer runoff average forecast for the Okanogan River is 49%, Similkameen River is 48%, Methow River is 50% and Salmon Creek is 52%. June 1 snow cover on the Okanogan was 49% of average and Methow was 9%. May precipitation in the Okanogan-Methow was a dismal 36% of average, with precipitation for the water year at 54% of average. May streamflow for the Methow River was 39% of average, 54% for the Okanogan River and 60% for the Similkameen. Snow-water content at Harts Pass SNOTEL was 3 inches. Average for this site is 25.3 inches on June 1. Combined storage in the Conconully Reservoirs was 12,100-acre feet, which is 51% of capacity and 67% of the June 1 average. Temperatures were slightly above normal for the past month and 1 degree above normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Okanogan - Methow River Basins

Streamflow Forecasts - June 1, 2001

		<<----- Drier ----- Future Conditions ----- Wetter ----->						
Forecast Point	Forecast Period	Chance Of Exceeding *						30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
=====								
SIMILKAMEEN near Nighthawk (1)	JUN-JUL	109	282	360	48	438	611	755
	JUN-SEP	154	330	410	48	490	666	850
OKANOGAN near Tonasket (1)	JUN-JUL	101	317	415	49	513	729	848
	JUN-SEP	135	380	492	49	604	849	1005
SALMON CREEK near Conconully	JUN-JUL	0.09	1.95	4.80	52	7.65	11.83	9.30
	JUN-SEP	0.1	2.2	5.3	52	8.4	13.0	10.2
METHOW RIVER near Pateros	JUN-SEP	159	229	277	50	325	395	555
	JUN-JUL	148	209	250	51	291	352	486

OKANOGAN - METHOW RIVER BASINS Reservoir Storage (1000 AF) - End of May					OKANOGAN - METHOW RIVER BASINS Watershed Snowpack Analysis - June 1, 2001			
Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg	Watershed	Number of Data Sites	This Year as % of Last Yr	as % of Average
SALMON LAKE	10.5	7.0	7.6	9.0	OKANOGAN RIVER	6	40	49
CONCONULLY RESERVOIR	13.0	5.1	13.1	9.0	OMAK CREEK	1	0	0
					SANPOIL RIVER	0	0	0
					SIMILKAMEEN RIVER	0	0	0
					TOATS COULEE CREEK	0	0	0
					CONCONULLY LAKE	1	0	0
					METHOW RIVER	3	10	9

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

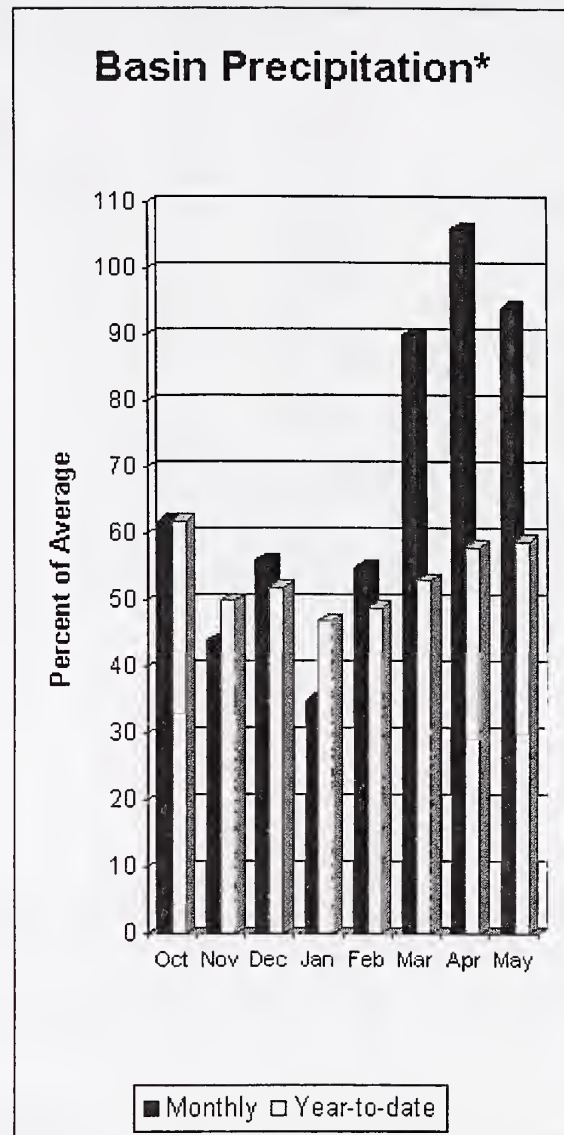
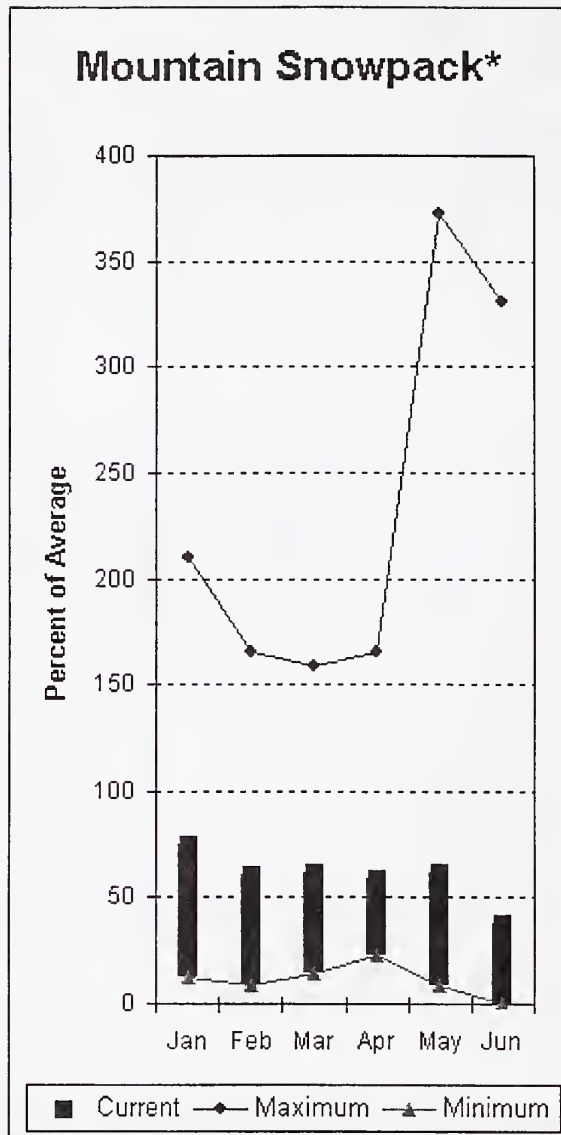
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 (2) - The value is natural flow - actual flow may be affected by upstream water management.

Okanogan-Methow River Basins
Percent of Average
June 1, 2001

Snowpack - 44%
Precipitation - 54%
Reservoir Capacity - 51%



Wenatchee - Chelan River Basins



*Based on selected stations

Precipitation during May was 94% of average in the basin and 59% for the year-to-date. Runoff for Entiat River is forecast to be 50% of average for the summer. The June-September average forecast for Chelan River is 52%, Wenatchee River at Plain is 42% and Stehekin is 50%. Icicle, Stemilt and Squilchuck creeks are all expected to fall into the same forecast range. May average streamflows on the Chelan River were 75% and on the Wenatchee River 78%. June 1 snowpack in the combined Wenatchee basins was 38% of average. Reservoir storage in Lake Chelan was 556,200-acre feet, 123% of June 1 average and 82% of capacity. Lyman Lake SNOTEL had the most snow water with 21.5 inches of water. This site would normally have 43.3 inches on June 1. Temperatures were 1-2 degrees above normal for May and near normal for the water year.

Wenatchee - Chelan River Basins

Streamflow Forecasts - June 1, 2001

Forecast Point	Forecast Period	<<===== Drier =====>>		Future Conditions		===== Wetter =====>>		30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	Chance Of Exceeding * (% AVG.)	30% (1000AF)	10% (1000AF)	
CHELAN RIVER near Chelan	JUN-SEP	222	318	383	52	448	544	738
	JUN-JUL	168	253	310	52	367	452	602
STEHEKIN near STEHEKIN	JUN-SEP	167	231	275	50	319	383	548
	JUN-JUL	111	163	199	47	235	287	422
ENTIAT RIVER near Ardenvoir	JUN-SEP	47	62	73	50	84	99	145
WENATCHEE at Plain	JUN-JUL	144	210	255	43	300	366	600
	JUN-SEP	159	243	300	42	357	441	718
STEMILT nr Wenatchee (miners in)	JUNE-SEP	30	57	75	54	93	120	138
ICICLE CREEK near Leavenworth	JUN-SEP	73	97	113	57	129	153	198
	JUN-JUL	60	83	98	57	113	136	172

WENATCHEE - CHELAN RIVER BASINS Reservoir Storage (1000 AF) - End of May

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
CHELAN LAKE	676.1	556.2	457.8	450.6

WENATCHEE - CHELAN RIVER BASINS Watershed Snowpack Analysis - June 1, 2001

Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average
CHELAN LAKE BASIN	4	34	39
ENTIAT RIVER	1	0	0
WENATCHEE RIVER	6	35	36
SQUILCHUCK CREEK	0	0	0
STEMILT CREEK	1	0	0
COLOCKUM CREEK	1	0	0

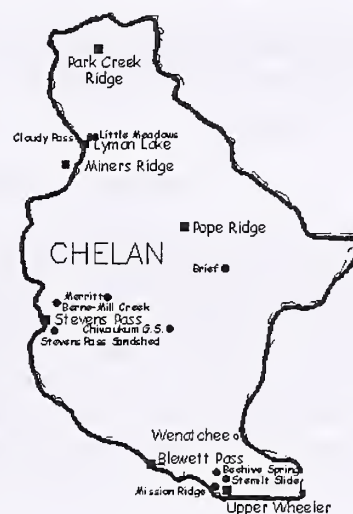
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The average is computed for the 1961-1990 base period.

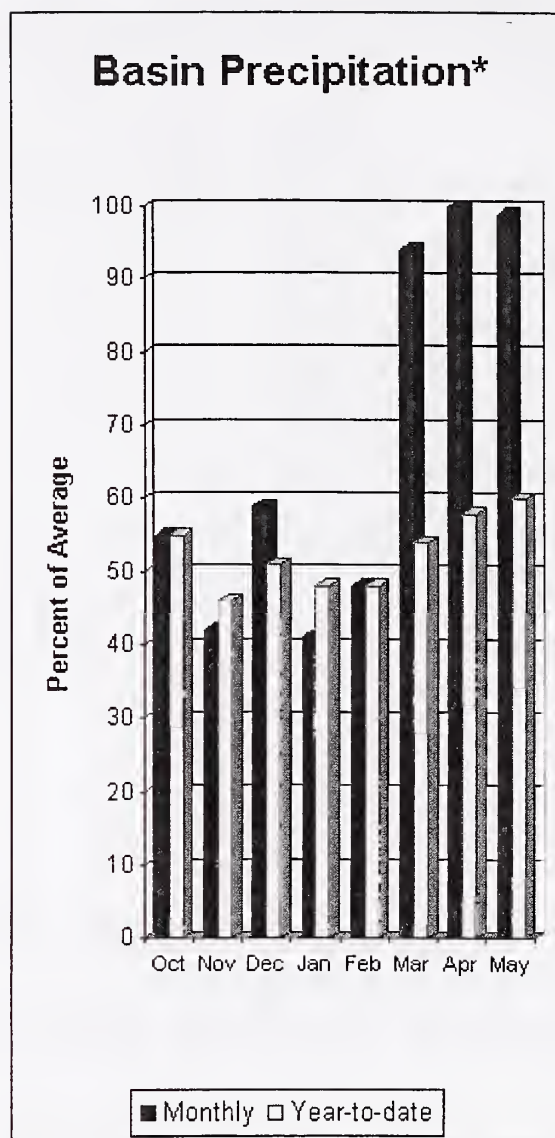
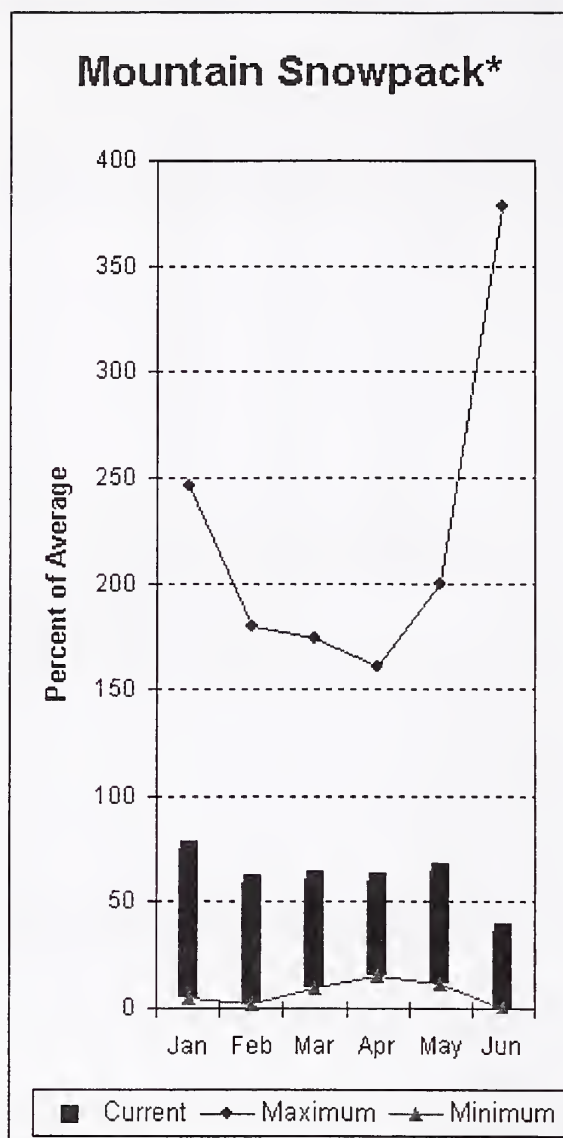
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Wenatchee-Chelan River Basins Percent of Average June 1, 2001

Snowpack - 38%
Precipitation - 59%
Reservoir Capacity - 82%



Upper Yakima River Basin



*Based on selected stations

June 1 reservoir storage for the Upper Yakima reservoirs was 497,300-acre feet, 67% of average. Forecasts for the Yakima River at Cle Elum are 54% of average and the Teanaway River near Cle Elum is at 52%. Lake inflows are all forecasted to be much below average this summer. May streamflows within the basin were Yakima near Cle Elum at 85% and Cle Elum River near Roslyn at 86%. June 1 snowpack was 36% based upon 6 snow courses and SNOTEL readings within the Upper Yakima Basin. Precipitation was 99% of average for May and 60% year-to-date for water. Volume forecasts for the Yakima Basin are for natural flow. As such, they June differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

Upper Yakima River Basin

Streamflow Forecasts - June 1, 2001

Forecast Point	Forecast Period	<----- Drier ----- Future Conditions ----- Wetter ----->						30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	Chance Of Exceeding *		30% (1000AF)	10% (1000AF)	
				50% (Most Probable) (1000AF)	(% AVG.)			
KEECHELUS LAKE INFLOW	JUN-JUL	9.0	18.2	25	48	31	40	51
	JUN-SEP	12.8	24	31	50	38	49	62
KACHESS LAKE INFLOW	JUN-JUL	3.0	10.1	15.0	33	19.9	27	45
	JUN-SEP	3.1	11.3	16.9	33	23	31	52
CLE ELUM LAKE INFLOW	JUN-JUL	47	71	88	44	105	129	201
	JUN-SEP	55	84	104	44	124	153	239
YAKIMA at Cle Elum	JUN-JUL	105	155	190	53	225	275	361
	JUN-SEP	141	200	240	54	280	339	444
TEANAWAY near Cle Elum	JUN-JUL	1.7	12.0	19.0	53	26	36	36
	JUN-SEP	4.1	14.2	21	52	28	38	40

UPPER YAKIMA RIVER BASIN Reservoir Storage (1000 AF) - End of May					UPPER YAKIMA RIVER BASIN Watershed Snowpack Analysis - June 1, 2001			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
KEECHELUS	157.8	90.6	131.5	144.0	UPPER YAKIMA RIVER	7	28	38
KACHESS	239.0	166.0	236.5	218.0				
CLE ELUM	436.9	240.7	436.2	378.0				

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

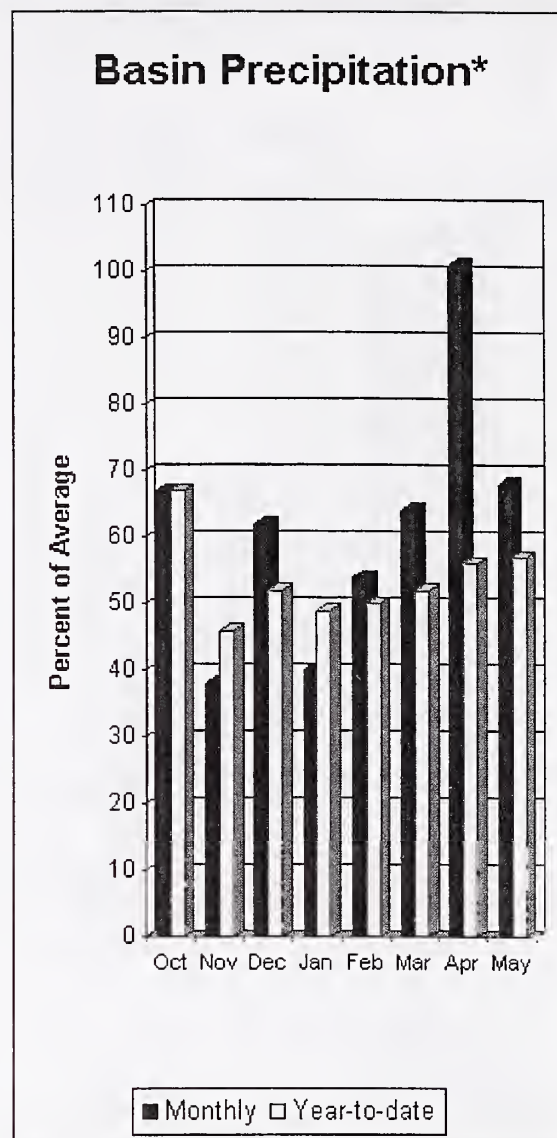
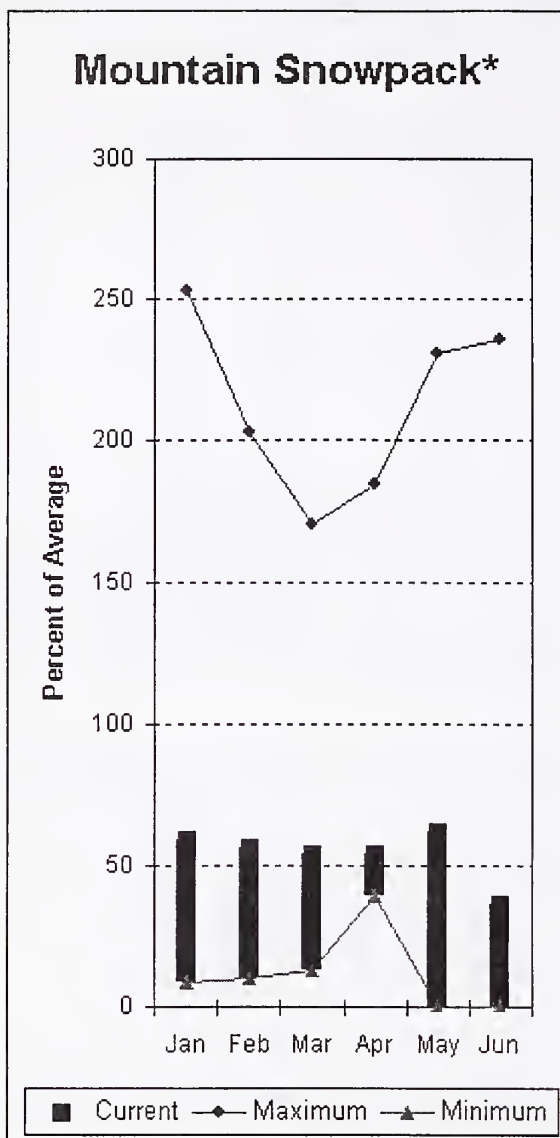
(2) - The value is natural flow - actual flow may be affected by upstream water management.



Upper Yakima River Basin
Percent of Average
June 1, 2001

Snowpack - 36%
Precipitation - 60%
Reservoir Capacity - 60%

Lower Yakima River Basin



*Based on selected stations

May average streamflows within the basin were: Yakima River near Parker, 66%; Naches River near Naches, 60%; and Yakima River at Kiona, 30%. June 1 reservoir storage for Bumping and Rimrock reservoirs was 182,900-acre feet, 94% of average. Forecast averages for Yakima River near Parker are 47%; American River near Nile, 40%; Ahtanum Creek, 45%; and Klickitat River near Glenwood, 54%. June 1 snowpack was 36% based upon 5 snow courses and SNOTEL readings within the Lower Yakima Basin. Precipitation was 68% of average for May and 57% year-to-date for water. Temperatures were 2 degrees above normal for the month and 1 degree below average for the water year. Volume forecasts for Yakima Basin are for natural flow. As such, they June differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

For more information contact your local Natural Resources Conservation Service office.

Lower Yakima River Basin

Streamflow Forecasts - June 1, 2001

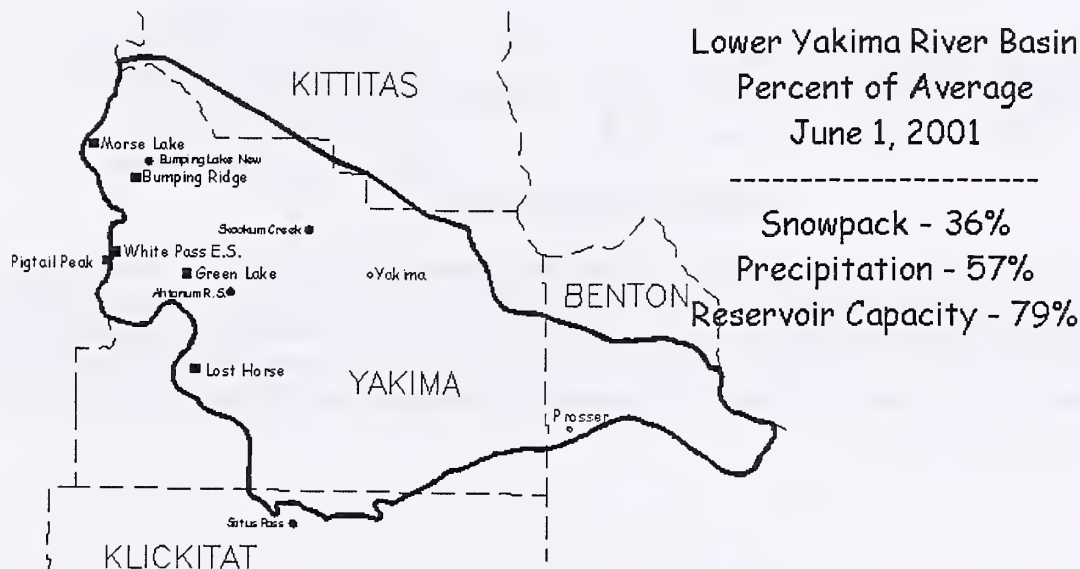
Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	Chance Of Exceeding * 50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
BUMPING LAKE INFLOW	JUN-SEP	3.7	16.7	26	33	34	47	77
	JUN-JUL	1.5	13.1	21	32	29	41	65
AMERICAN RIVER near Nile	JUN-SEP	13.7	21	26	40	31	38	65
	JUN-JUL	10.1	17.2	22	39	27	34	56
RIMROCK LAKE INFLOW	JUN-SEP	32	46	56	39	66	80	143
	JUN-JUL	21	32	40	38	48	59	105
NACHES near Naches	JUN-SEP	94	151	190	45	229	286	424
	JUN-JUL	70	117	149	43	181	228	347
AHTANUM CREEK nr Tampico (2)	JUNE-SEP	8.5	13.6	17.0	45	20	26	38
	JUNE-JUL	7.4	11.9	15.0	44	18.1	23	34
YAKIMA near Parker	JUN-SEP	210	350	445	47	540	680	938
	JUN-JUL	155	270	348	47	426	541	749
KLICKITAT near Glenwood	JUN-JUN	9.6	15.8	20	51	24	30	39
	JUN-SEP	21	31	38	54	45	54	70

LOWER YAKIMA RIVER BASIN Reservoir Storage (1000 AF) - End of May					LOWER YAKIMA RIVER BASIN Watershed Snowpack Analysis - June 1, 2001		
Reservoir	Usable Capacity	*** Usable Storage This Year	Last Year	*** Avg	Watershed	Number of Data Sites	This Year as % of Last Yr Average
BUMPING LAKE	33.7	33.7	32.1	27.0			
RIMROCK	198.0	149.2	195.7	167.0			

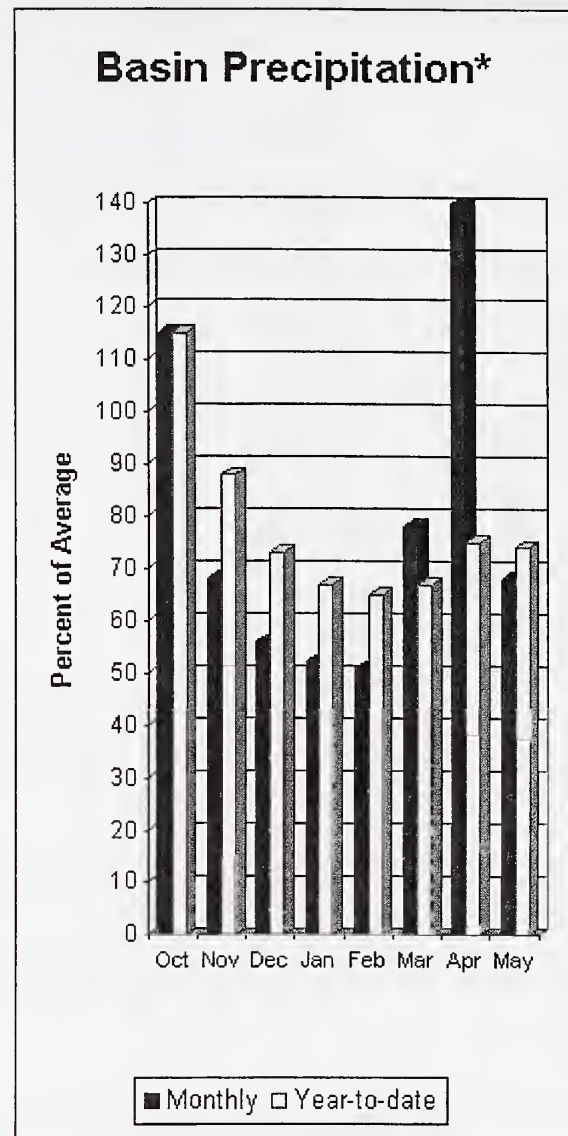
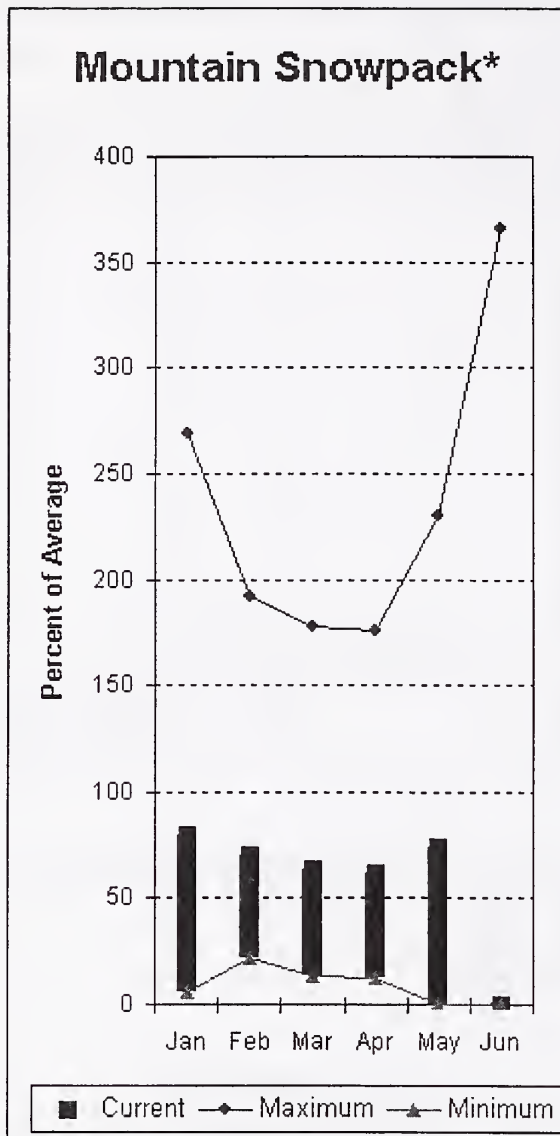
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

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 (2) - The value is natural flow - actual flow may be affected by upstream water management.



Walla Walla River Basin



*Based on selected stations

May precipitation was 68% of average, maintaining the year-to-date precipitation at 74% of average. Snowpack in the basin melted out about 20-days early. Streamflow forecasts have decreased slightly from last month but still remain the highest in the state at 83% of average streamflow in the South Fork Walla Walla River and 92% for Mill Creek. May streamflow was 89% of average for the Walla Walla River. Average temperatures were 2 degrees above normal for May and have averaged about 2 degrees below normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Walla Walla River Basin

Streamflow Forecasts - June 1, 2001

		<===== Drier ===== Future Conditions ===== Wetter =====>						
Forecast Point	Forecast Period	===== Chance Of Exceeding * =====						
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
=====		=====						
MILL CREEK at Walla Walla	JUNE-SEP	3.72	5.61	6.90	92	8.19	10.08	7.50
	JUNE-JUL	3.53	5.42	6.70	92	7.98	9.87	7.30
SF WALLA WALLA near Milton-Freewater	JUN-JUL	10.8	13.6	15.5	80	17.4	20	19.3
	JUN-SEP	21	25	27	83	30	33	33

WALLA WALLA RIVER BASIN Reservoir Storage (1000 AF) - End of May					WALLA WALLA RIVER BASIN Watershed Snowpack Analysis - June 1, 2001			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					WALLA WALLA RIVER	2	0	0

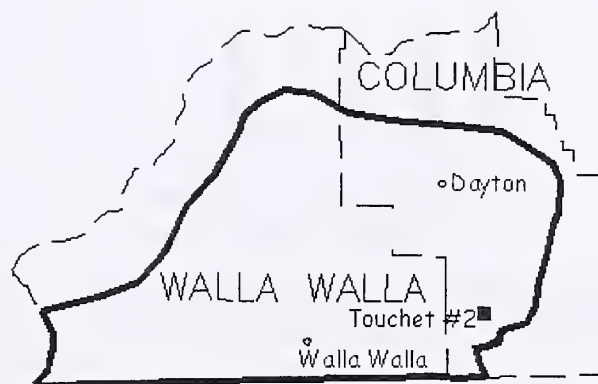
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The average is computed for the 1961-1990 base period.

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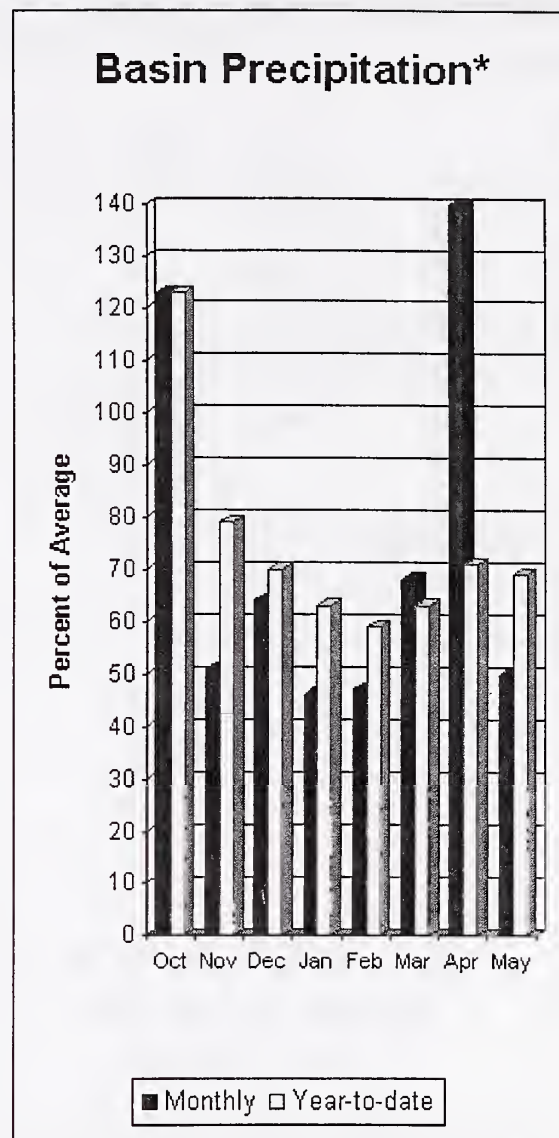
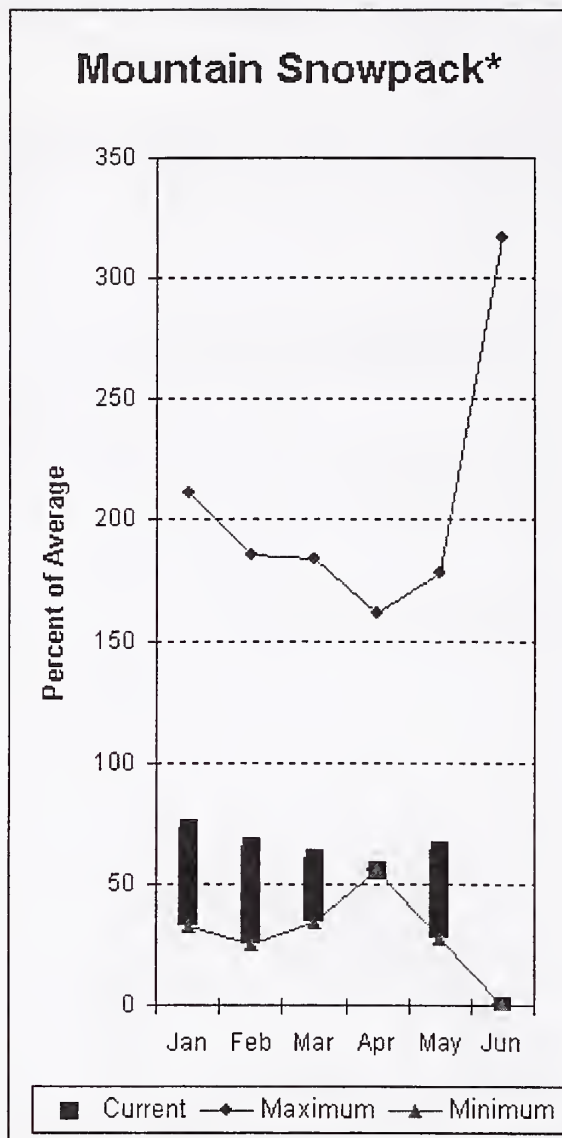
Walla Walla River Basin
Percent of Average
June 1, 2001

Snowpack - 0%
Precipitation - 74%



High Ridge ■

Lower Snake River Basin



*Based on selected stations

The June - September forecast is for 56% for Clearwater River at Spalding. The Snake and Grande Ronde rivers can expect summer flows to be about 50% of normal as well. May precipitation was 50% of average, bringing the year-to-date precipitation to 69% of average. Nine stations within the basin all reported a melt out of snowpack prior to June 1. May streamflow was 62% of average for Snake River below Lower Granite Dam and 78% for Grande Ronde River near Troy. Average temperatures were 3 degree above normal for May and remained 1 degree below normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Lower Snake River Basin

Streamflow Forecasts - June 1, 2001

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>					
		Chance Of Exceeding *		Chance Of Exceeding *		Chance Of Exceeding *	
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)
CLEARWATER at Spalding (1,2)	JUN-JUL	2097	2890	3251	54	3612	4405
	JUN-SEP	2367	3216	3602	56	3988	4837
						30-Yr Avg. (1000AF)	
						5972	
						6405	

LOWER SNAKE RIVER BASIN Reservoir Storage (1000 AF) - End of May

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg

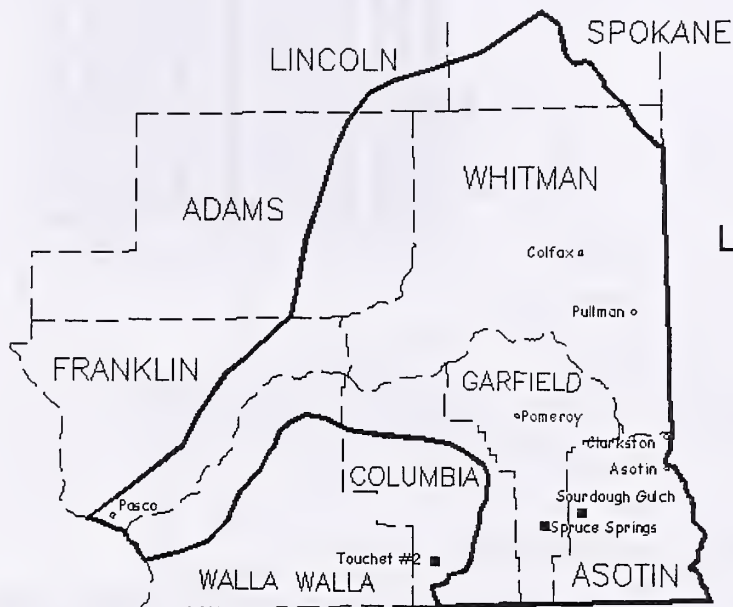
LOWER SNAKE RIVER BASIN Watershed Snowpack Analysis - June 1, 2001

Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average
LOWER SNAKE, GRANDE RONDE	9	0	0

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

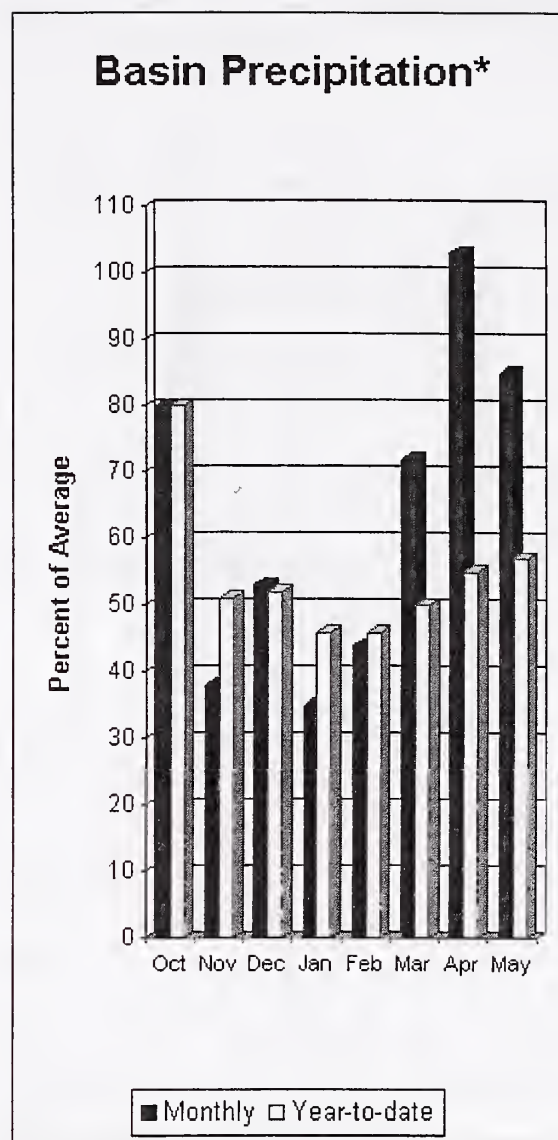
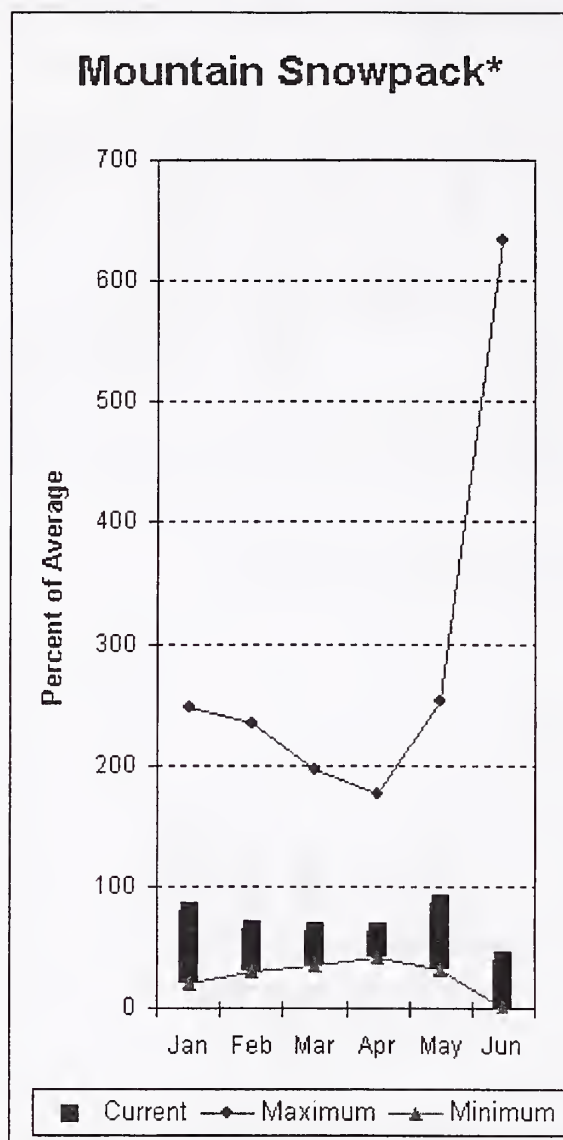
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Lower Snake River Basin
Percent of Average
June 1, 2001

Snowpack - 0%
Precipitation - 69%

Cowlitz - Lewis River Basins



*Based on selected stations

Forecasts for June – September streamflows within the basin are Lewis at Ariel; 58%, Cowlitz at Castle Rock; 54% of average. The Columbia at The Dalles is expected to remain about the same as last month at 52-54% of average. May average streamflow for Cowlitz River was 94% and 92% for Lewis River. May precipitation was 85% of average and the water-year average was 57%. June 1 snow cover for Cowlitz River was 53%, and Lewis River was 26% of average. Paradise Park SNOTEL reported the most water content for the basin with 41.5 inches. Average June 1 water content is 48.1 inches. Average temperatures were 1 degree above normal during May and have remained near average throughout the water year.

For more information contact your local Natural Resources Conservation Service office.

Cowlitz - Lewis River Basins

Streamflow Forecasts - June 1, 2001

Forecast Point	Forecast Period	<----- Drier ----->		Future Conditions		>----- Wetter ----->		30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	Chance Of Exceeding * (% AVG.)	30% (1000AF)	10% (1000AF)	
LEWIS at Ariel (2)	JUN-JUL	120	162	191	54	220	262	354
	JUN-SEP	206	257	292	58	327	378	506
KLICKITAT near Glenwood	JUN-JUN	9.6	15.8	20	51	24	30	39
	JUN-SEP	21	31	38	54	45	54	70

COWLITZ - LEWIS RIVER BASINS Reservoir Storage (1000 AF) - End of May

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg

COWLITZ - LEWIS RIVER BASINS Watershed Snowpack Analysis - June 1, 2001

Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average
LEWIS RIVER	4	6	26
COWLITZ RIVER	7	38	51

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

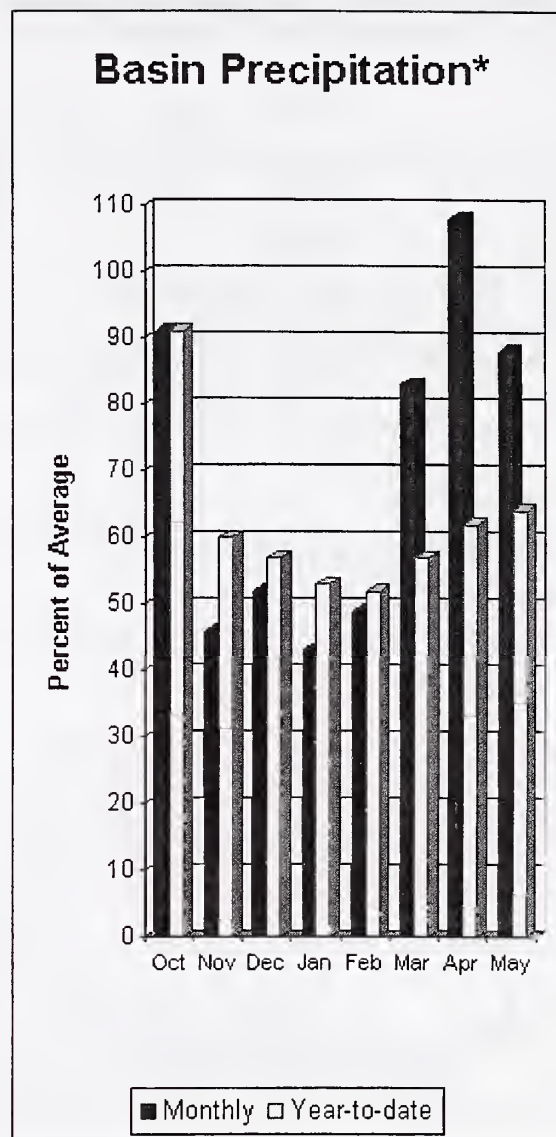
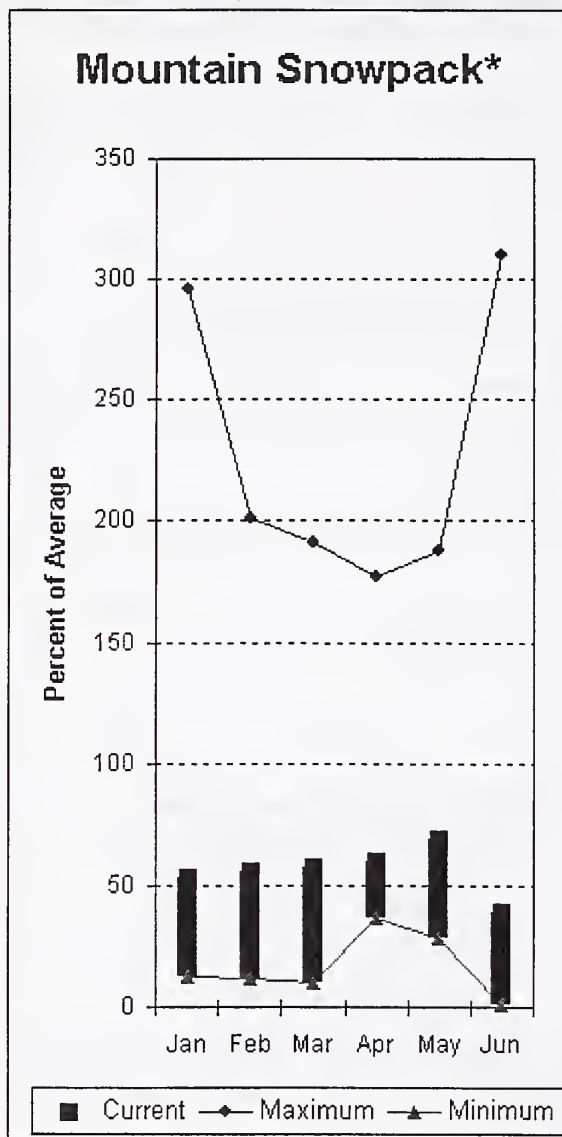
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 (2) - The value is natural flow - actual flow may be affected by upstream water management.



Cowlitz-Lewis River Basins
Percent of Average
June 1, 2001

Snowpack - 40%
Precipitation - 57%

White - Green River Basins



*Based on selected stations

Summer runoff is forecast to be 55% of normal for the Green River below Howard Hanson Dam and 56% for the White River near Buckley. June 1 snowpack was 49% of average in both White River and Puyallup river basins and 37% in Green River Basin. Water content on June 1 at Corral Pass SNOTEL, at an elevation of 6,000 feet, was 12.5 inches. This site has a June 1 average of 19.6 inches. May precipitation was 88% of average, bringing the water year-to-date to 64% of average for the basins. Average temperatures in the area were near normal last month.

For more information contact your local Natural Resources Conservation Service office.

White - Green - Puyallup River Basins

Streamflow Forecasts - June 1, 2001

Forecast Point	Forecast Period	<<----- Drier ----- Future Conditions ----- Wetter ----->>						30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	Chance Of Exceeding *		30% (1000AF)	10% (1000AF)	
WHITE near Buckley (1,2)	JUN-JUL	76	110	125	56	140	174	225
	JUN-SEP	117	160	180	56	200	243	320
GREEN below Howard Hanson (1,2)	JUN-JUL	13.4	33	42	54	51	71	78
	JUN-SEP	25	48	58	55	68	91	106

WHITE - GREEN - PUYALLUP RIVER BASINS Reservoir Storage (1000 AF) - End of May

WHITE - GREEN - PUYALLUP RIVER BASINS Watershed Snowpack Analysis - June 1, 2001

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					WHITE RIVER	3	31	49
					GREEN RIVER	3	23	18
					PUYALLUP RIVER	3	31	49

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

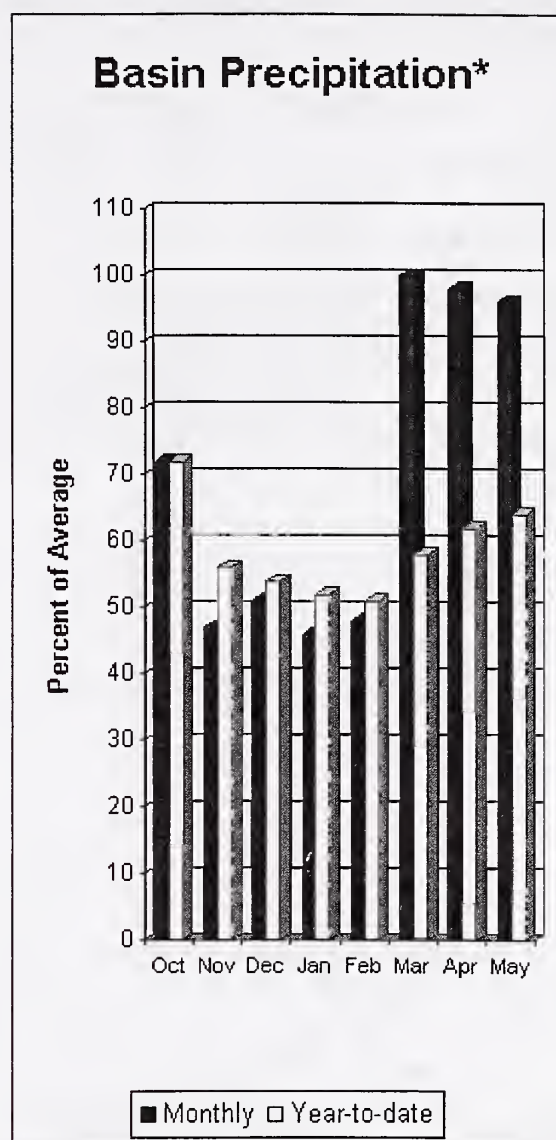
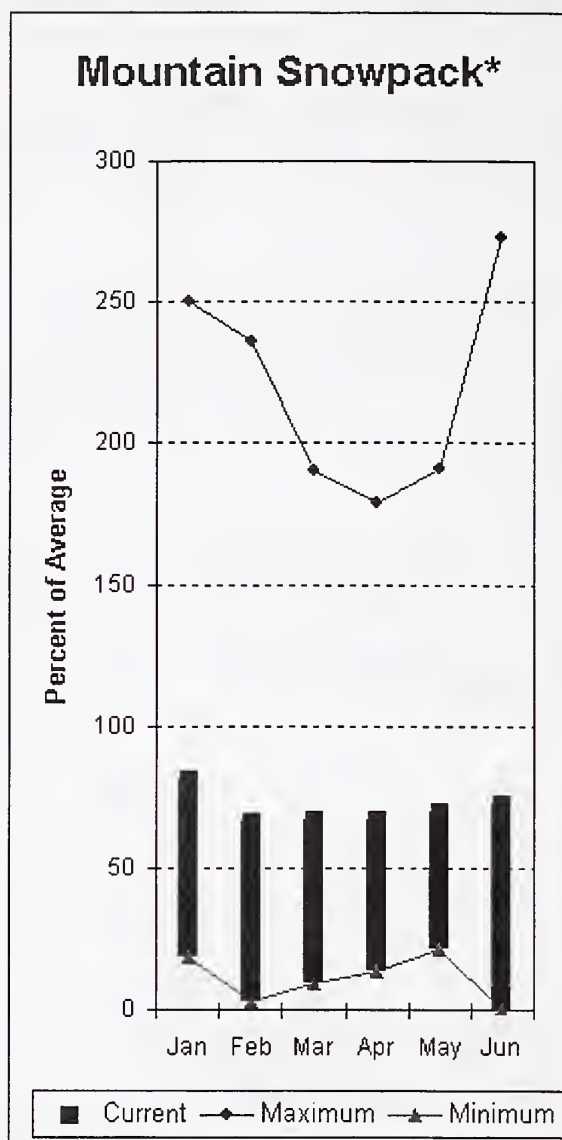
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White-Green-Puyallup Basins
Percent of Average
June 1, 2001

Snowpack - 39%
Precipitation - 64%

Central Puget Sound River Basins



*Based on selected stations

Forecast for spring and summer flows are: 65% for Cedar River near Cedar Falls; 62% for Rex River; 64% for South Fork of the Tolt River; and 64% for Cedar River at Cedar Falls. Basin-wide precipitation for May was 96% of average, bringing water-year-to-date to 64% of average. June 1 average snow cover in Tolt River Basin was 105%, Snoqualmie River Basin was 63%, and Skykomish River Basin was 84%. All sites within the Cedar River Basin had melted out by June 1. Olallie Meadows SNOTEL site at 3960 feet, had 13 inches of water content. Average June 1 water content is 30 inches at Olallie Meadows. May temperatures were near normal for the past month.

For more information contact your local Natural Resources Conservation Service office.

Central Puget Sound River Basins

Streamflow Forecasts - June 1, 2001

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>				30-Yr Avg. (1000AF)		
		=====		Chance Of Exceeding *			=====	
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)		30% (1000AF)	10% (1000AF)
CEDAR near Cedar Falls	JUN-JUL	8.2	14.6	19.0	65	23	30	29
	JUN-SEP	10.6	18.4	24	65	29	37	37
REX near Cedar Falls	JUN-JUL	0.82	3.73	5.70	62	7.67	10.58	9.21
	JUN-SEP	1.6	5.2	7.6	62	10.0	13.6	12.3
CEDAR RIVER at Cedar Falls	JUN-JUL	5.6	10.3	13.5	64	16.7	21	21
	JUN-SEP	9.1	12.0	14.0	64	16.0	18.9	22
SOUTH FORK TOLT near Index	JUN-JUL	2.31	3.32	4.00	64	4.68	5.69	6.30
	JUN-SEP	3.89	4.97	5.70	64	6.43	7.51	8.90

CENTRAL PUGET SOUND RIVER BASINS Reservoir Storage (1000 AF) - End of May					CENTRAL PUGET SOUND RIVER BASINS Watershed Snowpack Analysis - June 1, 2001			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					CEDAR RIVER	4	0	0
					TOLT RIVER	2	56	105
					SNOQUALMIE RIVER	5	41	54
					SKYKOMISH RIVER	2	48	84

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

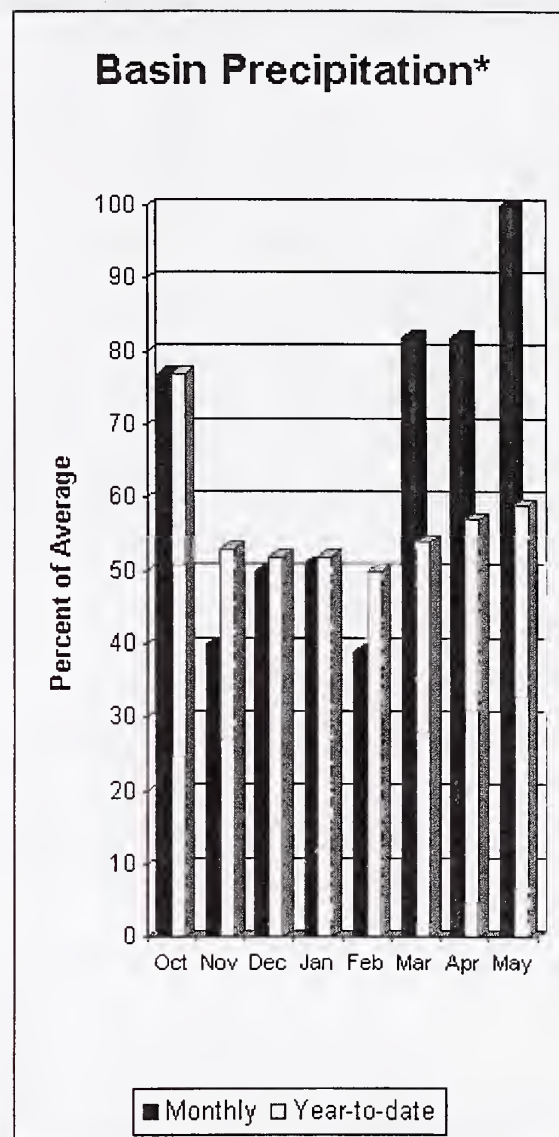
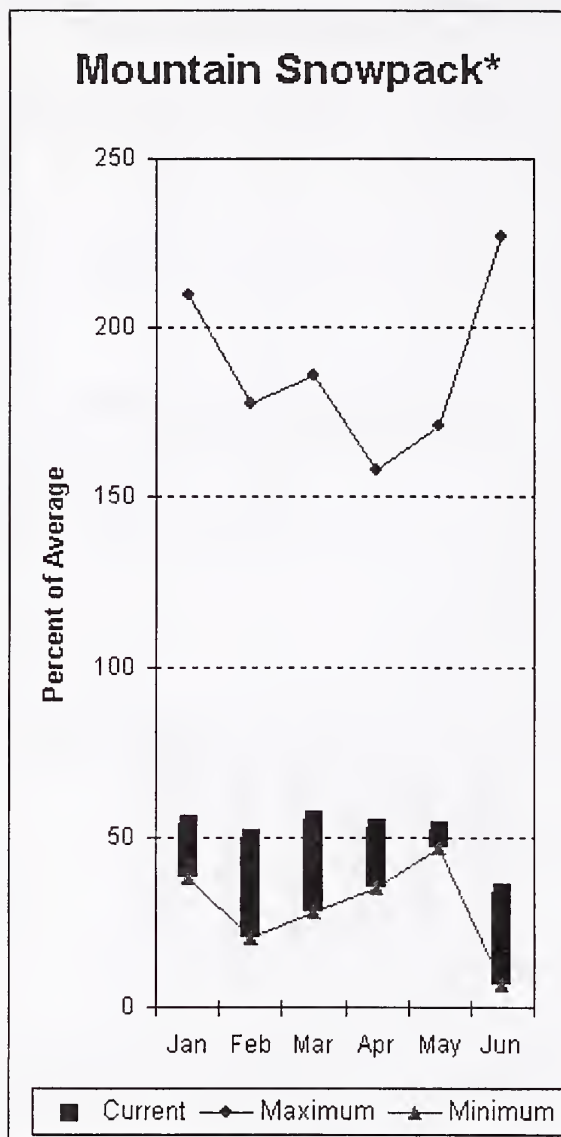
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Central Puget Sound Basins
Percent of Average
June 1, 2001

Snowpack - 73%
Precipitation - 64%



North Puget Sound River Basins



*Based on selected stations

Forecast for Skagit River streamflow at Newhalem is 56% of average for the spring and summer period. May streamflow in Skagit River was 92% of average. Other forecast points included Baker River at 58% and Thunder Creek at 67% of average. Basin-wide precipitation for May was 103% of average, bringing water-year-to-date to 59% of average. June 1 average snow cover in Skagit River Basin was 28%, Baker River Basin was 40% and sites in the Nooksack River Basin had melted out. Rainy Pass SNOTEL, at 4,780 feet, had 1.2 inches of water content. Average June 1 water content is 20.4 inches at Rainy Pass. June 1 Skagit River reservoir storage was 99% of average and 74% of capacity. Average May temperatures were near normal for the basin and remain near average for the water year.

For more information contact your local Natural Resources Conservation Service office.

North Puget Sound River Basins

Streamflow Forecasts - June 1, 2001

		<----- Drier ----- Future Conditions ----- Wetter ----->						
Forecast Point	Forecast Period	Chance Of Exceeding *						30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
=====								
THUNDER CREEK near Newhalem	JUN-JUL	87	100	109	68	118	131	160
	JUN-SEP	145	162	174	67	186	203	259
SKAGIT at Newhalem (2)	JUN-SEP	618	724	795	56	866	972	1418
BAKER RIVER near Concrete	JUN-JUL	233	261	280	57	299	327	490
	JUN-SEP	389	405	416	58	427	443	717

NORTH PUGET SOUND RIVER BASINS Reservoir Storage (1000 AF) - End of May

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
ROSS	1404.1	1025.4	975.0	1033.9
DIABLO RESERVOIR	90.6	86.1	87.1	86.1
GORGE RESERVOIR	9.8	8.0	8.1	8.3

NORTH PUGET SOUND RIVER BASINS Watershed Snowpack Analysis - June 1, 2001

Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average
SKAGIT RIVER	3	33	28
BAKER RIVER	5	0	38
NOOKSACK RIVER	2	0	0

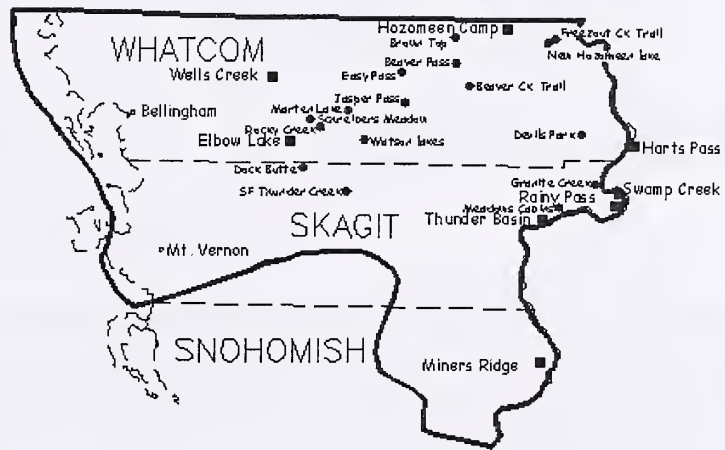
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The average is computed for the 1961-1990 base period.

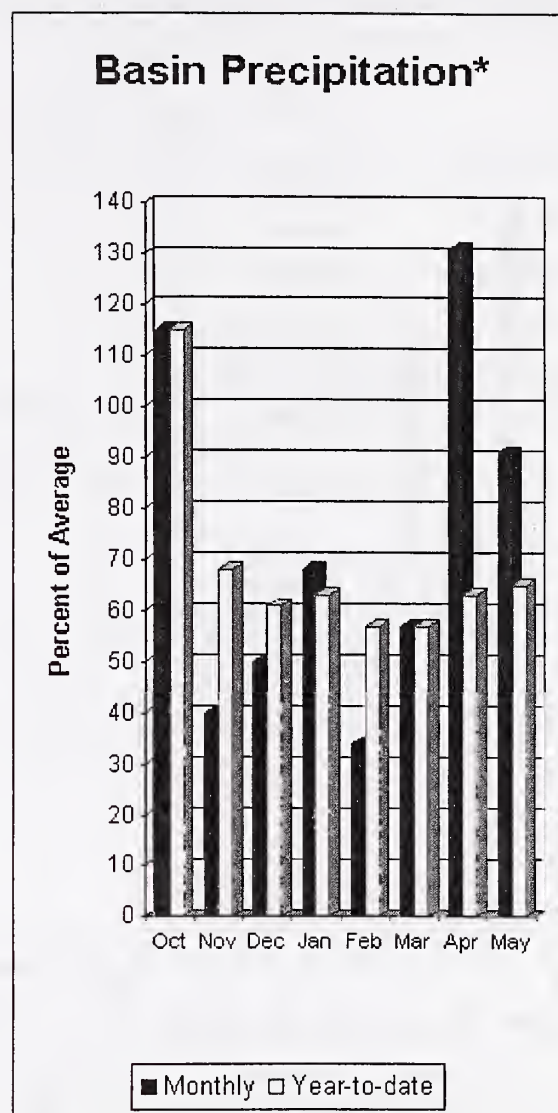
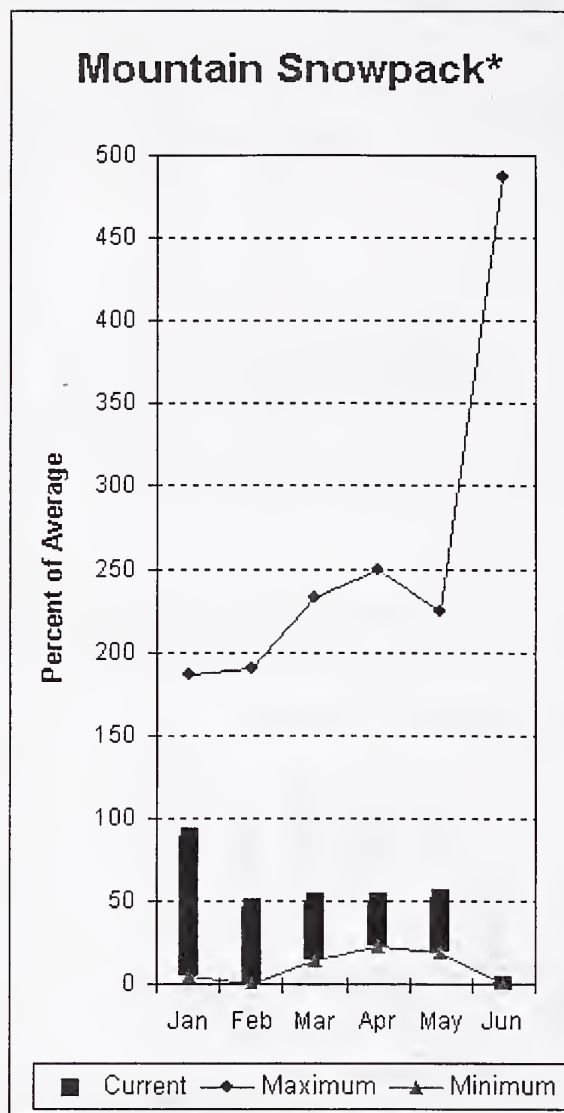
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North Puget Sound Basins Percent of Average June 1, 2001

Snowpack - 34%
Precipitation - 59%
Reservoir Capacity - 74%



Olympic Peninsula River Basins



*Based on selected stations

Forecasted average runoff for streamflow in both the Dungeness River and Elwha River basins is 60%. Big Quilcene and Wynoochee rivers should expect below average runoff this summer also. May precipitation was 91% of average. Precipitation has accumulated at 65% of average for the water year. May precipitation at Quillayute was 7 inches. The thirty-year average for May is 5.25 inches. Limited snow surveys and long-term SNOTEL readings showed that most of the snowpack had melted prior to June 1. Temperatures were 1-2 degrees below average for the month and about 1 degree below average for the water year.

For more information contact your local Natural Resources Conservation Service office.

Olympic Peninsula River Basins

Streamflow Forecasts - June 1, 2001

		<<===== Drier ===== Future Conditions ===== Wetter =====>							
Forecast Point	Forecast Period	=====		Chance Of Exceeding *		=====		30-Yr Avg. (1000AF)	
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)		
DUNGENESS near Sequim	JUN-SEP	49	56	61	60	66	73	102	
,	JUN-JUL	37	42	45	61	48	53	74	
ELWHA near Port Angeles	JUN-SEP	155	176	190	60	204	225	319	
	JUN-JUL	115	131	142	61	153	169	233	

OLYMPIC PENINSULA RIVER BASINS Reservoir Storage (1000 AF) - End of May

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg

OLYMPIC PENINSULA RIVER BASINS Watershed Snowpack Analysis - June 1, 2001

Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average
OLYMPIC PENINSULA	1	0	0
ELWHA RIVER	0	0	0
MORSE CREEK	0	0	0
DUNGENESS RIVER	0	0	0
QUILCENE RIVER	1	0	0
WYNOOCHEE RIVER	0	0	0

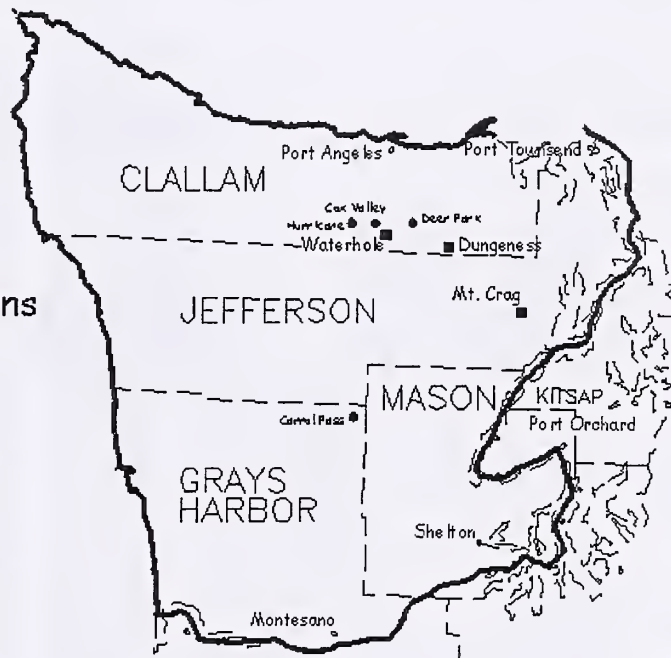
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The average is computed for the 1961-1990 base period.

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Olympic Peninsula River Basins Percent of Average June 1, 2001

Snowpack - 0%
Precipitation - 65%



GLACIER PAGE 2001

North Cascades National Park

Glacier Monitoring Program

The National Park Service began monitoring glaciers in North Cascades National Park in 1993. Goals for this program and additional data can be found at North Cascades National Park home page at <http://www.nps.gov/noca/massbalance.htm>.

The four glaciers monitored are located at the headwaters of four park watersheds, each with large hydroelectric operations (Figure 1). The glaciers represent a range in elevation from 8500 to 5700 feet, and a range in climatic conditions from maritime to continental. Methods include at least two visits annually to each glacier to measure winter accumulation and summer melt. Measurements are taken at a series of points down the centerline of each glacier (Table 1), then integrated across the entire glacier surface to determine annual mass balance for the entire glacier. Glaciers east of the hydrologic crest of the park (Silver and Sandalee) have recently had more positive mass balances than the west-side glaciers (Noisy, North Klawatti, South Cascade) due to their higher elevations, continental climate, and north aspects (Figure 2). Year to year variation is also large, as net mass balance varied 11.5 ft/yr. between 1993 and 2000.

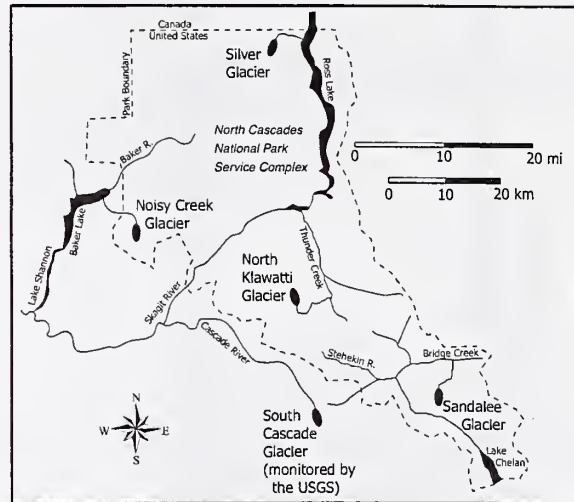


Figure 1. Glaciers monitored in North Cascades N.P.S. Complex.

Glacier:	Elev. (feet)	2001 Accumulation (inches W.E.)	1999 Accumulation (inches W.E.)	Average Accumulation (inches W.E.)
Noisy Creek	6050	104	214	137
	6020	112	190	135
	5940	102	165	120
	5800	94	167	117
	5650	96	171	117
Silver	8450	82	189	127
	7920	79	141	111
	7540	73	164	124
	7100	12	63	57
North Klawatti	7670	75	182	123
	7300	86	191	122
	6900	78	167	120
	6300	80	168	107
Sandalee	6130	60	130	94
	7360	67	153	120
	7100	80	185	138
	6810	76	152	119
	6530	71	214	147

Table 1 presents this spring's winter accumulation data, along with average values and data from water year 1999, a year of heavy winter accumulation. Accumulation generally increases with elevation, but on steep slopes snow can be redistributed by wind and avalanches. This year's accumulation values are below the eight-year average. Winter balances are 80% of average for Noisy Glacier, 64% for Silver, 64% for North Klawatti, and 57% for Sandalee. The winter balance for Noisy Glacier is closer to the average because the Baker watershed receives more snow than any other in the park.

Table 1. Snow water equivalent (W.E.) measured at monitored glaciers in late April/early May.

Estimates of total glacial contribution to runoff for three watersheds are based on the mass balance measurements and GIS analysis to determine glacier area within 165 ft elevation bands (Table 2). Glaciers reduce the variation of flow in these watersheds by providing meltwater from ice in dry/warm years, and by storing water in wet/cool years. Glacial stream buffering capacity in these watersheds varies by as much as 100% annually. Magnitude of glacial contribution to streamflow is large, but varies by the amount of glacial cover in each watershed. Thunder Creek is 13% glaciated, while Baker River and Stehekin River are 6% and 3%, respectively (Post and others, 1971).

Relative importance of glacial contribution to streamflow increases from west to east. For example, glaciers annually contribute a higher percentage of meltwater to streamflow in the Stehekin watershed than in the Baker, despite the fact that the Baker is more glaciated. This is due to lower snowfall east of the hydrologic crest of the North Cascades. In this low accumulation year we anticipate that glacial contribution to summer runoff will be above average in these watersheds.

	Mean Glacial Runoff	Range of Glacial Runoff		Percent Glacial Runoff to Total Summer Runoff	
		Minimum	Maximum	Minimum	Maximum
Noisy Creek Glacier	1.6	1.3	2.1	---	---
Baker River Watershed	73	52	93	2.4	5.1
North Klawatti Glacier	3.9	2.9	5.1	---	---
Thunder Creek Watershed	101	80	135	15	30
Sandalee Glacier	0.4	0.4	0.5	---	---
Stehekin River Watershed	68	54	91	4.9	8.9

Table 2. Glacial contribution to summer stream flow for three watersheds. Runoff units are thousands of acre-feet. Data from 1993-2000 except the Sandalee Glacier and Stehekin River Watershed (1995-2000).

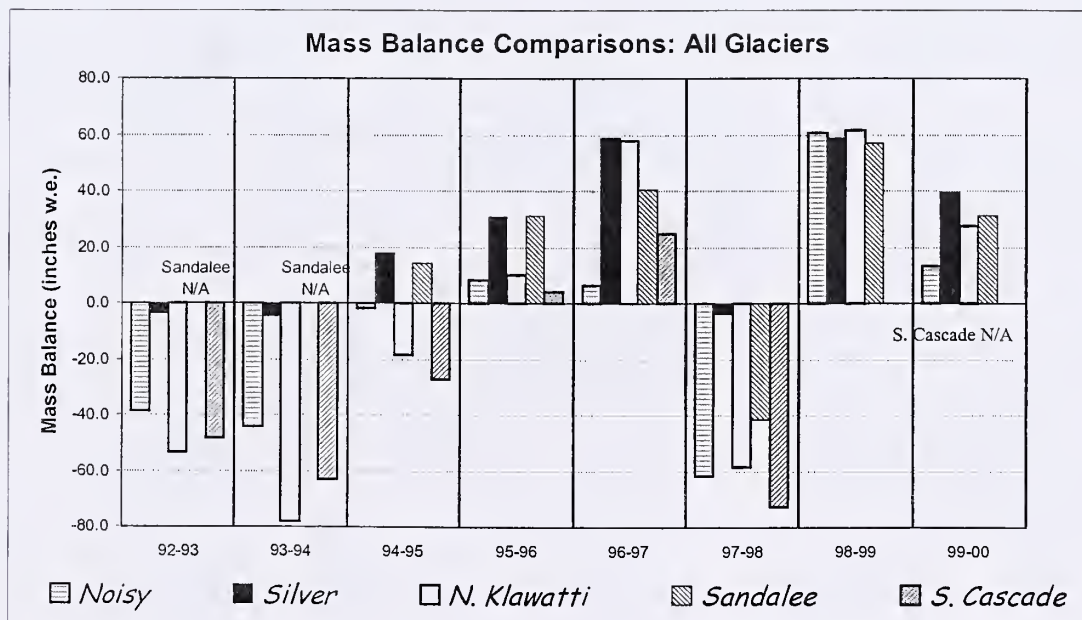


Figure2. Net annual mass balance for the five glaciers monitored in the North Cascades

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The Following Organizations Cooperate with the Natural Resources Conservation Service in Snow Survey Work*:

Canada	Ministry of the Environment Investigations Branch, Victoria, British Columbia
State	Washington State Department of Ecology Washington State Department of Natural Resources
Federal	Department of the Army Corps of Engineers U.S. Department of Agriculture Forest Service U.S. Department of Commerce NOAA, National Weather Service U.S. Department of Interior Bonneville Power Administration Bureau of Reclamation Geological Survey National Park Service Bureau of Indian Affairs
Local	City of Tacoma City of Seattle Chelan County P.U.D. Pacific Power and Light Company Puget Sound Power and Light Company Washington Water Power Company Snohomish County P.U.D. Colville Confederated Tribes Spokane County Yakama Indian Nation Whatcom County Pierce County
Private	Okanogan Irrigation District Wenatchee Heights Irrigation District Newman Lake Homeowners Association Whitestone Reclamation District

*Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.



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Washington Basin Outlook Report

Natural Resources Conservation Service
Spokane, WA



